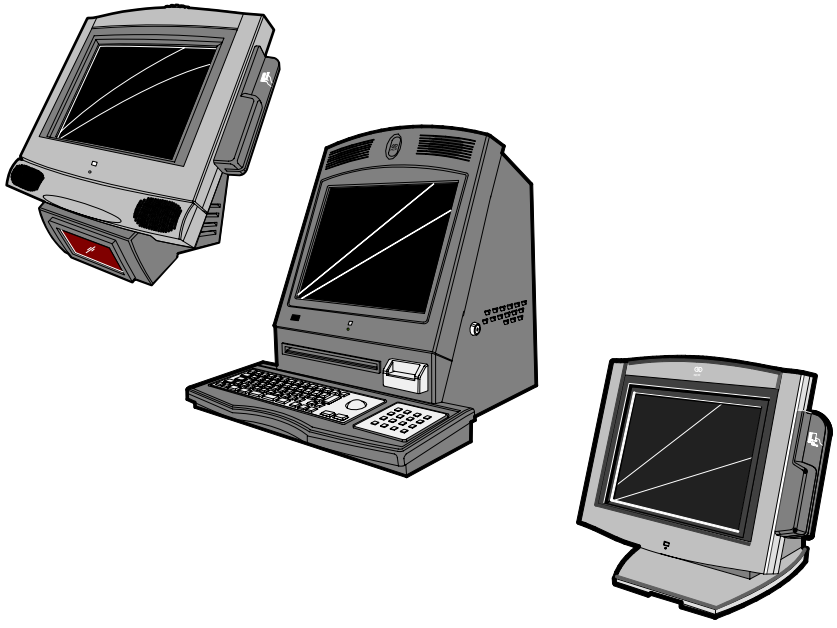
NCR EasyPoint 7401

Release 2.5

Hardware User's Guide



1979

B005-0000-1254
Issue H

The product described in this book is a licensed product of NCR Corporation.

NCR is a registered trademark of NCR Corporation.

NCR RealPOS, NCR RealPrice, NCR RealScan, NCR EasyPoint and NCR FastLane are either registered trademarks or trademarks of NCR Corporation in the United States and/or other countries.

MicroTouch is a registered trademark of MicroTouch.
NCR and EasyPoint are registered trademarks of NCR Corporation.
Novell and Netware are registered trademarks of Novell, Inc.
Pentium is a registered trademark of Intel Corporation.
Power Mon II is a registered trademark of Systems Enhancement Corporation.
Sound Blaster is a registered trademark of Creative Technology, Ltd.
SoundFusion is a registered trademark of Cirrus Logic, Inc.
Microsoft, Windows, and Windows NT are registered trademarks of Microsoft Corporation.
Symantic and Ghost are registered trademarks of Symantec Corporation in the United States and other countries.
It is the policy of NCR Corporation (NCR) to improve products as new technology, components, software, and firmware become available. NCR, therefore, reserves the right to change specifications without prior notice.

All features, functions, and operations described herein may not be marketed by NCR in all parts of the world. In some instances, photographs are of equipment prototypes. Therefore, before using this document, consult with your NCR representative or NCR office for information that is applicable and current.

To maintain the quality of our publications, we need your comments on the accuracy, clarity, organization, and value of this book.

Address correspondence to:

Manager, Information Products
NCR Corporation
2651 Satellite Blvd.
Duluth, GA 30096

Copyright © 2003
By NCR Corporation
Dayton, Ohio U.S.A.
All Rights Reserved

Preface

Audience

This book is written for hardware installer/service personnel, system integrators, and field engineers.

Notice: This document is NCR proprietary information and is not to be disclosed or reproduced without consent.

Safety Warnings

Servicing

This product does not contain user serviceable parts. Servicing should only be performed by a qualified service technician.

Fuse Replacement

Caution: For continued protection against risk of fire, replace only with the same type and ratings of fuse.

Attention: Pour prévenir et vous protéger contre un risque de feu, remplacer la fusible avec une autre fusible de même type, seulement.

Power Supply Cord Used as Disconnect Means

Caution: The power supply cord is used as the main disconnect device. Ensure that the socket outlet is located/installed near the equipment and is easily accessible.

Attention: Le cordon d'alimentation est utilisé comme interrupteur général. La prise de courant doit être située ou installée å proximité du matériel et être facile d'accés.

Lithium Battery Warning

Caution: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Attention: Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur. Mettre au rébut les batteries usagées conformément aux instructions du fabricant.

Battery Disposal (Switzerland)
Refer to Annex 4.10 of SR814.013 for battery disposal.

IT Power System
This product is suitable for connection to an IT power system with a phase-to-phase voltage not exceeding 240 V.

Peripheral Usage
This terminal should only be used with peripheral devices that are certified by the appropriate safety agency for the country of installation (UL, CSA, TUV, VDE) or those which are recommended by NCR Corporation.

DO NOT connect or disconnect a printer, keyboard, or any other terminal-powered peripheral while the terminal is powered on. Doing so may result in peripheral or system damage.

System Weight Considerations
Warning: The NCR 7401-1xxx and 7401-2xxx terminals must be mounted securely to prevent a hazard. They must be installed in accordance with local building codes. The post or wall on which the unit is mounted should be able to withstand four times the weight of the unit, which is approximately 20 lbs. (9 kg). The NCR 7401-4xxx is a desk-top unit that has an assembled weight of approximately 90 lbs. (40.8 kg).

Environmental Consciousness
NCR is demonstrating its concern for the environment by designing an intelligent power management system into this terminal that operates efficiently whether the system is in a stand-alone or network environment.

Grounding Instructions

In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances. Do not modify the plug provided – if it will not fit the outlet, have the proper outlet installed by a qualified electrician. Improper connection of the equipment-grounding conductor can result in a risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal. Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the product is properly grounded.

Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the product's plug. **Repair or replace damaged or worn cords immediately.**

References

- *NCR EasyPoint 7401 Hardware Service Guide* (B005-0000-1341)
- *NCR EasyPoint 7401 Site Preparation Guide* (B005-0000-1255)
- *NCR EasyPoint 7401 Interface Guide* (B005-0000-01405)
- *NCR EasyPoint 7401 ATX 38 Printer User's Manual* (B005-0000-1454)
- *NCR EasyPoint 7401/7454 Retail Terminal Parts Identification Manual* (B005-0000-1072)
- *NCR FitClient Software User's Guide* (B005-0000-1235)
- *NCR EasyPoint 7401 Migration Guide* (B005-0000-1500)
- *NCR Retail Platform Software Terminal Utilities Guide* (B005-0000-1503)

Table of Contents

Chapter 1: **7401-2xxx/3xxx Product Overview**

Introduction 1-1
Serial Number/Model Number Label 1-2
Fixed-Angle Mount Label 1-2
Tilt-Mount Label 1-3
Model Numbers 1-4
Hardware Modules 1-5
Base Unit 1-5
Hardware Options 1-6
Terminal Components not Supported 1-8
System Configuration Diagram 1-9
Kit Configuration Diagram 1-10
Hardware Module Descriptions 1-11
Processor Board 1-11
Processor/Chip Set 1-11
Video Subsystem 1-12
Ethernet 10/100Base-T LAN Communications 1-13
Wireless LAN Communications 1-15
Universal Serial Bus 1-16
Serial Ports 1-16
Hardware Monitor 1-17
PCI Expansion Header 1-17
IDE Header 1-17
Audio 1-18
Magnetic Stripe Reader 1-18

Touch Screen Controller 1-18
Processor Board Connectors 1-19
NCR Retail Specific Hardware 1-20
Board BIOS 1-25
Operator Display 1-29
LCD Adapter Board 1-29
LCD Backlight Inverter Module 1-29
Touch Screen 1-30
Features 1-31
Magnetic Stripe Reader 1-31
Printer Options 1-32
7401-K590 Self-Service Printer 1-32
7158 Printer 1-33
7167 Printer 1-33
7194 Printer 1-34
7197 Printer 1-34
Other Integrated Devices and Indicators 1-35
Hard Disk Drive 1-35
Reset Switch 1-35
Internal Speaker 1-36
POS Connector Board 1-36
Motion Sensor 1-36
Power/Status LED 1-37
Power OK LED 1-37
LAN Status LEDs 1-38
Power Supply 1-38
Uninterruptible Power System (Optional) 1-39
Integrated Scanner Module (Optional) 1-39
Integrated Speaker Module (Optional) 1-39

Compact Flash (Optional) 1-39
USB RS-232 Port Server 1-40
Integrated CD-ROM Drive (Tilt Mount Model) 1-41
Additional Connectors (Pentium III Board) 1-42
Compatibility 1-43
LAN Communications 1-43
Application Programmability 1-43
Operating System Information 1-43
Migration 1-44
Retail Applications 1-44
Retail Peripherals 1-44
Retail Systems 1-45
Platform 1-45
Networks 1-45
Platform Load 1-45

Chapter 2: **7401-4xxx Product Overview**

Introduction 2-1
Serial Number/Model Number Label 2-2
7401-4xxx Model Numbers 2-2
Hardware Modules 2-3
Base Unit 2-3
Hardware Options 2-4
Terminal Components not Supported 2-5
System Configuration Diagram 2-6
Hardware Module Descriptions 2-7
Processor Board 2-7
Processor/Chip Set 2-7
Video Subsystem 2-8

Ethernet 10/100Base-T LAN Communications 2-8
Wireless LAN Communications 2-10
Universal Serial Bus 2-11
Serial Ports 2-11
Hardware Monitor 2-12
PCI Expansion Header 2-12
IDE Header 2-12
Audio 2-13
Magnetic Stripe Reader 2-13
Touch Screen Controller 2-13
Processor Board Connectors 2-14
NCR Retail Specific Hardware 2-15
Board BIOS 2-18
Operator Display 2-22
LCD Adapter Board 2-22
LCD Backlight Inverter Module 2-23
Touch Screen 2-23
Features 2-24
Secure Cabinet with Integrated Speakers 2-24
Ruggedized Keyboard with Trackball 2-25
Pin Pad 2-25
Motorized Card Reader 2-26
Magnetic Stripe Reader 2-26
Full Page Printer 2-27
Other Integrated Devices and Indicators 2-28
Hard Disk Drive 2-28
Integrated CD-ROM 2-28
Reset Switch 2-28
Compact Flash 2-29

Internal Speaker 2-29
POS Connector Board 2-29
USB Camera 2-29
Motion Sensor 2-30
Power/Status LED 2-30
Power OK LED 2-31
LAN Status LEDs 2-31
Power Supply 2-31
Motorized Card Reader Power Supply 2-32
Full Page Printer Power Supply 2-32
Integrated Speakers 2-32
EasyPoint 45 Pedestal 2-33

Chapter 3: **7401-2xxx/3xxx Hardware Installation**

Introduction 3-1
Installation Summary 3-1
Installation Restrictions 3-2
Connecting the Cables 3-3
Fixed-Angle Mount (F504) 3-3
Fixed-Angle Mount (F503) 3-5
Cable Routing 3-7
Cable Connector Identification 3-9
Tilt Mount 3-10
Cable Routing 3-11
Cable Connector Identification 3-12
Installing Peripherals 3-13
Installing a Transaction Printer 3-13
RS-232 Installation 3-13
USB Installation 3-14

7401-K590 Self-Service Printer....3-15
Installing a Cash Drawer....3-16
Installing a Second Cash Drawer....3-17
Installing PC Cards....3-18
Mounting a Fixed-Angle Mount Terminal....3-21
7401-K522 Pedestal Mount....3-22
7401-K521 Wall Mount....3-24
7401-K521 Wall Mount with 7401-K530 Pole Brackets....3-26
Installing a K501 Tilt Mount Terminal....3-33
7401-K533 Wall Mount....3-34
Wall Mounting a 7401-K502 Core Module....3-35
7401-9212 LCD No-Cabinet (12.1-inch)....3-37
Installation Guidelines....3-38
Mounting Specification Illustrations....3-39
7401-9512 LCD No-Cabinet (15-inch)....3-40
Installation Guidelines....3-40
Mounting Specification Illustrations....3-41
4055 Uninterruptible Power System (UPS)....3-43
Installing the UPS....3-44
Installing the Power Mon II® Software....3-44
Configuring the Power Mon II® Software....3-45
Finalizing the Installation....3-46
Completing the OS Installation (Win2000)....3-46
Completing the OS Installation (WinXPe)....3-46
Completing the OS Installation (WinNT)....3-47
Completing the OS Installation (Win98) - (Discontinued)....3-48
Setting Auto-Logon (WinNT Terminal)....3-49
Installing a Serial Mouse....3-54
Calibrating the Touch Screen....3-55

Calibration Using MicroTouch (Windows) 3-56
Calibration Using Microcal (DOS) 3-58
Calibration From the BIOS 3-59
Summary 3-60
Out-of-Box Failures 3-60

Chapter 4: **7401-4xxx Hardware Installation**

Introduction 4-1
Installation Summary 4-1
U.K. Keyboard Configuration 4-1
Windows 2000 4-1
Windows XPe 4-2
Windows NT 4-3
Installation Restrictions 4-4
Connecting the Cables 4-5
Cable Routing 4-5
Cable Connector Identification 4-5
Installing Peripherals 4-6
Installing the Angled Magnetic Stripe Reader (MSR) 4-7
Installing Country Keyboards 4-8
Using the Full Page Printer 4-13
Loading the Paper 4-13
Removing Paper from the Printer Feed Rolls 4-14
Removing Power from the Printer 4-14
Using the Printer Test and Display Panel 4-15
Display LED Indicators 4-15
Panel Switches 4-16
Full Page Printer Diagnostics and Setup 4-17
Installing a 7401-4xxx on a Table Top Mount 4-18

Mounting Procedures 4-18
Accessing the Mounting Screws 4-20
Installing a 7401-4xxx on the EasyPoint 45 Pedestal 4-21
4055 Uninterruptible Power System (UPS) 4-22
Installing the UPS 4-22
Installing the Power Mon II® Software 4-23
Configuring the Power Mon II® Software 4-23
Finalizing the Installation 4-24
Completing the OS Installation (Win2000) 4-24
Completing the OS Installation (WinXPe) 4-24
Completing the OS Installation (WinNT) 4-25
Completing the OS Installation (Win98) - (Discontinued) . 4-26
Calibrating the Touch Screen 4-27
Calibration Using MicroTouch (Windows) 4-27
Calibration Using Microcal (DOS) 4-29
Calibration from the BIOS 4-30
Summary 4-31
Out-of-Box Failures 4-31

Chapter 5: **Setup**

Introduction 5-1
Entering Setup without a Keyboard 5-1
Entering Setup Using a Keyboard 5-2
How to Select Menu Options 5-3
Setting the Date and Time 5-3
Setting Passwords 5-4
Configuring a Hard Drive 5-5
Setting Memory Cache 5-5
Setting Memory Shadow 5-6

Setting Boot Options 5-6
Allocating Interrupts 5-7
Restoring Factory Settings 5-7
BIOS Default CMOS Values (7401-22xx/35xx/45xx BIOS Version 2.2.1.x) 5-8
Main Values 5-8
Advanced Values 5-9
Security Values 5-14
Power Values 5-14
Boot Values 5-14
Exit Values 5-15
Interrupts (7401-22xx/35xx/45xx BIOS Version 2.2.1.x) 5-16
Memory Map (7401-22xx/35xx/45xx BIOS Version 2.2.1.x) 5-17
BIOS Default CMOS Values (7401-26xx/46xx BIOS Version 2.3.x.x) 5-18
Main Values 5-18
Advanced Values 5-19
Security Values 5-24
Power Values 5-24
Boot Values 5-25
Exit Values 5-25
Interrupts (7401-26xx/46xx BIOS Version 2.3.x.x) 5-26
Memory Map (7401-26xx/46xx BIOS Version 2.3.x.x) 5-27
BIOS Default CMOS Values (7401-21xx/31xx BIOS Version 1.5.0.4 - Discontinued) 5-28
Main Values 5-28
Advanced Values 5-30
I/O Device Configuration 5-30
PCI Configuration 5-30

Interrupts (7401-21xx/31xx BIOS Version 1.5.0.4 - Discontinued) 5-31
Memory Map (7401-21xx/31xx BIOS Version 1.5.0.4 - Discontinued) 5-32

Chapter 6: **Operating System Recovery**

Introduction 6-1
Prerequisites 6-1
Updating Procedures 6-3
Completing the OS Installation (Win2000) 6-5
Completing the OS Installation (WinXPe) 6-5
Completing the OS Installation (WinNT) 6-6
Completing the OS Installation (Win98) – (Discontinued) 6-6
Gold Disk Contents 6-8
Microsoft Operating System License Agreements 6-8
Operating System Restrictions 6-9
Standby and Hibernate Mode Restriction 6-9
NCR 7401-22xx/25xx/32xx/35xx Win2000 Operating System Recovery Software *(Version 02.03.00.01)* 6-9
NCR 7401-26xx/46xx Win2000 Operating System Recovery Software *(Version 02.05.00.02)* 6-11
NCR 7401-45xx Win2000 Operating System Recovery Software *(Version 02.04.00.02)* 6-14
NCR 7401-22xx/25xx/32xx/35xx WinXPe Operating System Recovery Software *(Version 02.05.00.01)* 6-16
NCR 7401-26xx/46xx WinXPe Operating System Recovery Software *(Version 02.05.00.01)* 6-18
NCR 7401-/22xx/25xx/26xx/32xx/35xx NT Operating System Recovery Software *(Version 02.05.00.02)* 6-20

NCR 7401-21xx/31xx NT Operating System Recovery Software *(Version 01.04.01.00)* 6-22
NCR 7401-4xxx NT Operating System Recovery Software *(Version 02.05.00.02)* 6-24
NCR 7401-22xx/25xx/32xx/35xx Win98 Operating System Recovery Software *(Version 02.03.00.01)* 6-26
NCR 7401-21xx/31xx Win98 Operating System Recovery Software *(Version 01.01.00.00)* 6-28
OS Recovery from a Larger Disk Image 6-29

Chapter 7: **BIOS Updating Procedures**

Introduction 7-1
Prerequisites 7-1
Updating Procedures 7-2
BIOS Crisis Recovery 7-5
Recovery Procedures 7-6
Cable/Connector Pin-Out Information 7-8

Chapter 8: **NCR 7401 7890/7892 Scanner Differences**

Introduction 8-1
Starting the 7401 Scanner Motor and Laser 8-2
Programming the 7401 Scanner Using Programming Tags 8-4
Programming the 7401 Scanner Through the RS-232 Interface 8-5
7401 Scanner Default Settings 8-6

Appendix A: **Cables**

7401 Cables A-1

Appendix B: **Feature Kits**

7401 Kits B-1

Revision Record

Issue	Date	Remarks
A	Aug 00	First issue (separated 7401 and 7454 sections out of B005-0000-1069)
B	Feb 01	Updated to Release 2.2 Removed hardware service information from this document which was previously called the *7401 Web Kiosk Hardware Installation and Service Guide* (B005-0000-1254) and renamed it the *7401 Web Kiosk Hardware User's Guide* (B005-0000-1254). The hardware service information was placed in a new document, the *7401 Web Kiosk Hardware Service Guide* (B005-0000-1341).
C	June 01	Updated to Release 2.3
D	Sept 01	Updated BIOS screens. Added PC Card installation.
E	Dec 01	Additional updates for Release 2.3
F	May 02	Updated to Release 2.4. Changed Web Kiosk to EasyPoint 7401. Added EasyPoint 7401-45xx terminal
F	Aug 02	Add EasyPoint 45 Pedestal
G	Sep 02	Add Country Keyboards to 7401-45xx
H	Dec 02	Updated to Release 2.5 Added 7401-26xx and 7401-46xx models Changed 7401-45xx references to 7401-4xxx

Radio Frequency Interference Statements

Federal Communications Commission (FCC)

Information to User

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference in which case the user will be required to correct the interference at his own expense.

NCR is not responsible for any radio or television interference caused by unauthorized modification of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by NCR. The correction of interference caused by such unauthorized modification, substitution or attachment will be the responsibility of the user. The user is cautioned that changes or modifications not expressly approved by NCR may void the user's authority to operate the equipment.

Canadian Department of Communications

This Class A digital apparatus complies with Canadian ICES-003.

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

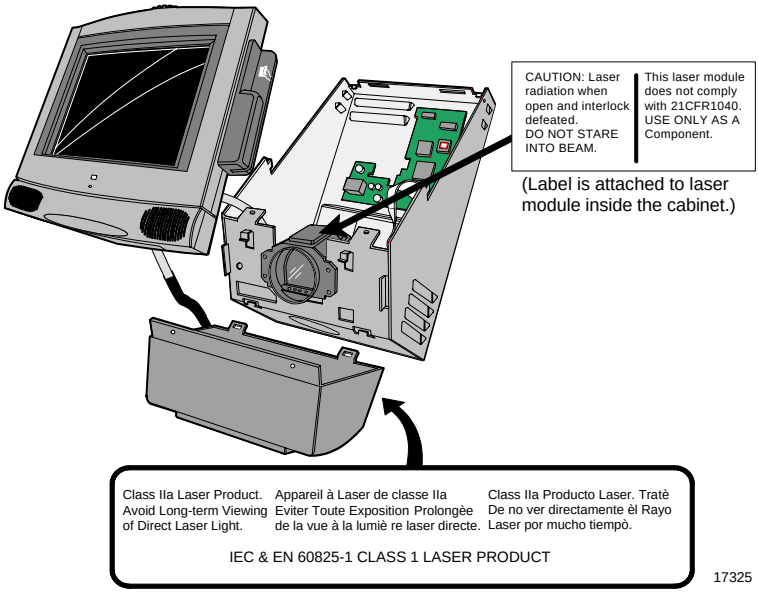
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le règlement sur le brouillage radioélectriques édicté par le ministrère des Communications du Canada.

Voluntary Control Council for Interference (VCCI)

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

IEC & EN Laser Product Label


CAUTION: Laser radiation when open and interlock defeated.
DO NOT STARE INTO BEAM.
This laser module does not comply with 21CFR1040. USE ONLY AS A Component.
(Label is attached to laser module inside the cabinet.)
Class IIa Laser Product. Avoid Long-term Viewing of Direct Laser Light.
Appareil à Laser de classe IIa Eviter Toute Exposition Prolongèe de la vue à la lumiè re laser directe.
Class IIa Producto Laser. Tratè De no ver directamente èl Rayo Laser por mucho tiempò.
IEC & EN 60825-1 CLASS 1 LASER PRODUCT
17325

Laser Power

The NCR 7401 Scanner is not intended for long-term viewing of direct laser light. However, the unit is safe if used as intended. This scanner meets the following laser/LED power requirements.

- Class IIa CDRH (Center for Devices and Radiological Health)
- Class IIa Laser—Avoid long-term viewing of direct laser light
- Class 1 EN60-825 (Europäische Norm)

Following is the radiant energy of the laser/LED light as applied to each of the specified requirements.

Accessible Emission Limit (CDRH Calculation)	0.99 Milliwatts
Accessible Emission Limit EN60 825-1:1994+AII:1996	0.81 Milliwatts

Caution: Use of controls or adjustments or performance of procedures other than specified herein may result in hazardous radiation exposure.

Declaration of Conformity

Manufacturer's Name	NCR Corporation
Manufacturer's Address	NCR Corporation Retail Solutions Division – Atlanta 2651 Satellite Boulevard Duluth, GA 30096-5810
Type of Equipment	Information Technology Equipment
Model Number	Class 7401-2xxx and 7401-3xxx
Electrical Ratings (Input)	100-120 V/200-240 V, 2.0 A/1.0 A, 50-60 Hz

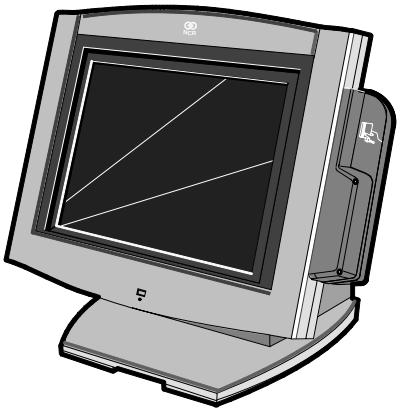
NCR Corporation, 1700 South Patterson Boulevard, Dayton, OH 45459, USA, declares that the equipment specified above conforms to the referenced EU Directives and Harmonized Standards.

EU Directive	Harmonized Standard(s)
89/336/EEC (EMC)	EN 55022 EN 55024 EN61003-2 EN61003-3
73/23/EEC (Low Voltage)	EN 60 950: A1 + A2 + A3 + A4 + All

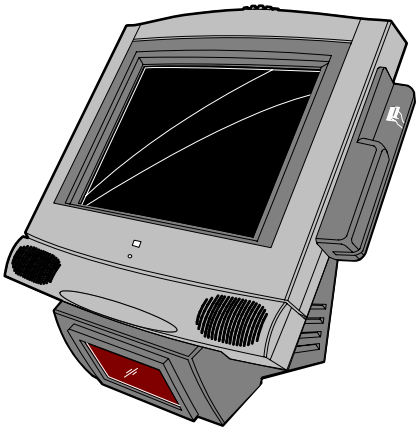
NCR Corporation
Retail Solutions Division — Atlanta
2651 Satellite Boulevard
Duluth, GA 30096-5810

European Contact:
International IP Counsel
206 Marylebone Road
London, NW1 6LY, England

Chapter 1: 7401-2xxx/3xxx Product Overview



Tilt Mount



Fixed-Angle Mount 18289

Introduction

The NCR EasyPoint 7401 is an interactive touch screen terminal with retail functionality that supports a variety of kiosk and self-service applications. The 7401 is housed in an integrated, compact cabinet and can be tilt mounted, fixed-angle mounted or flush mounted.
The major hardware features of the 7401 are a 12.1-inch or 15-inch flat panel display with touch screen input and LAN connectivity, plus optional magnetic stripe reader, infrared reader, scanner, stereo audio, self service printer and wireless LAN. It also supports custom kiosk environments.

The 7401 is Internet/Intranet ready. System loading occurs from a network server, and software and data content are delivered from a server through standard Internet protocols.

Serial Number/Model Number Label

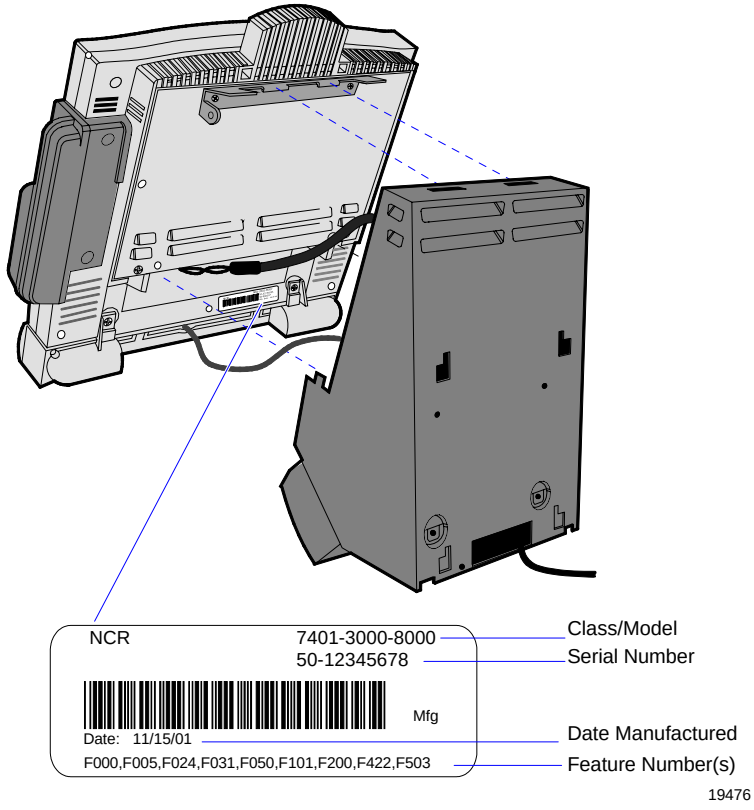
The unit's serial number, model number, tracer number, and date of manufacture are included on a label on the back of the Core Module. Refer to following sections for additional information.

The serial number is repeated on the non-MSR side of the Core Module.

Fixed-Angle Mount Label

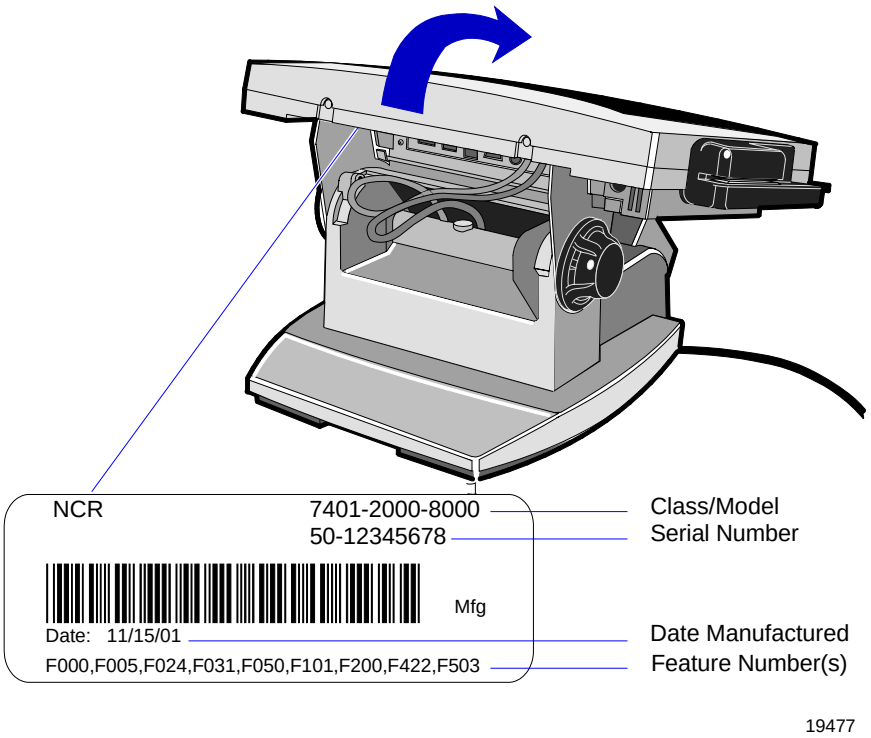
To view the label:

- For non-hinged mounts, remove the Core Module from the mount.
- For hinged mounts, the Core Module does not have to be removed.



Tilt-Mount Label

To view the label, tilt the Core Module and remove the cable cover.



Model Numbers

The following table identifies 7401 terminal models.

Model	Description
7401-2212	**Standard Model** - 12.1-inch Capacitive Touch LCD, Ethernet Cable
7401-3212	**Scanner Model** - 12.1-inch Capacitive Touch LCD, Integrated Fixed Angle Mount, and Ethernet Cable (Uses 1 RS-232 Port for Scanner)
7401-2622	**Bundled Model** - 12.1-inch Capacitive Touch LCD, Celeron 700 MHz, 128 MB SDRAM, 10 GB Hard Drive, Adapter Board (F031), and Ethernet Cable
7401-2512	**Standard Model** - 15-inch Capacitive Touch LCD, Ethernet Cable
7401-2518	**Standard Model** - 15-inch Resistive Touch LCD, Ethernet Cable
7401-2625	**Bundled Model** - 15-inch Capacitive Touch LCD, Celeron 700 MHz, 128 MB SDRAM, 10 GB Hard Drive, Adapter Board (F031), and Ethernet Cable
7401-2630	**Bundled Model** - 15-inch Capacitive Touch LCD, PIII 700 MHz, 128 MB SDRAM, 20 GB Hard Drive, Adapter Board (F031), and Ethernet Cable
7401-2635	**Bundled Model** - 15-inch Capacitive Touch LCD, PIII 1 GHz, 128 MB SDRAM, 20 GB Hard Drive, Adapter Board (F031), and Ethernet Cable
7401-2655	**Bundled Model** - 15-inch Capacitive Touch LCD, Celeron 700 MHz, 128 MB SDRAM, 256 MB Flash Disk, Adapter Board (F031), and Ethernet Cable
7401-9512	**No Bezel/Cabinet Model** - 15-inch Capacitive LCD, Ethernet Cable

Hardware Modules

Base Unit

- Processor Board
  - Pentium III/Celeron processor
  - SVGA chipset (12-inch monitor)
  - XGA chipset (15-inch monitor)
  - MPEGII chipset
  - 1 MB Flash BIOS (not CMOS)
  - Four RS-232 ports (two optionally powered)
  - 10/100BaseT Ethernet LAN chipset, Wake-on-LAN support, and RJ-45 port
  - PC Audio with an internal mono speaker
  - SoundBlaster® 16 compatible audio chipset
  - Two USB type A ports
  - PS/2 keyboard port
  - External VGA display port
  - Dual display support
  - External stereo speaker port
  - Internal PS/2 mouse (dedicated to the touch screen)
  - One SODIMM (Small Outline DIMM) RAM socket
  - 64 MB memory on board
  - IDE support for a hard disk, a CD ROM, and an optional Compact Flash disk in place of the hard disk

- POS Connector Board
  - Cash drawer port (supports two drawers via a Y-cable)
  - Internal parallel port (dedicated to the optional customer display)
  - Microphone
- 12.1-inch Operator Display – active capacitive touch LCD
- 15-inch Operator Display – active LCD with capacitive or resistive touch
- 2.5-inch low or high capacity hard disk
- Integrated Motion Sensor, capable of waking up the terminal from a low power state
- Integrated Power Supply
- Reset switch which can be used to recover from a lock-up condition
- 3-meter Ethernet cable
- U.S. power cord

Hardware Options

- Intel Pentium III Processor
- Integrated 3-track ISO MSR
- Integrated Scanner Module
- Integrated Stereo Module
- Integrated CD-ROM
- Integrated Infrared Sensor
- PCMCIA (for wireless LAN)
- Mounting options: Table-top, Pedestal, Pole, Wall, Tilt/Swivel
- 256 MB Compact Flash

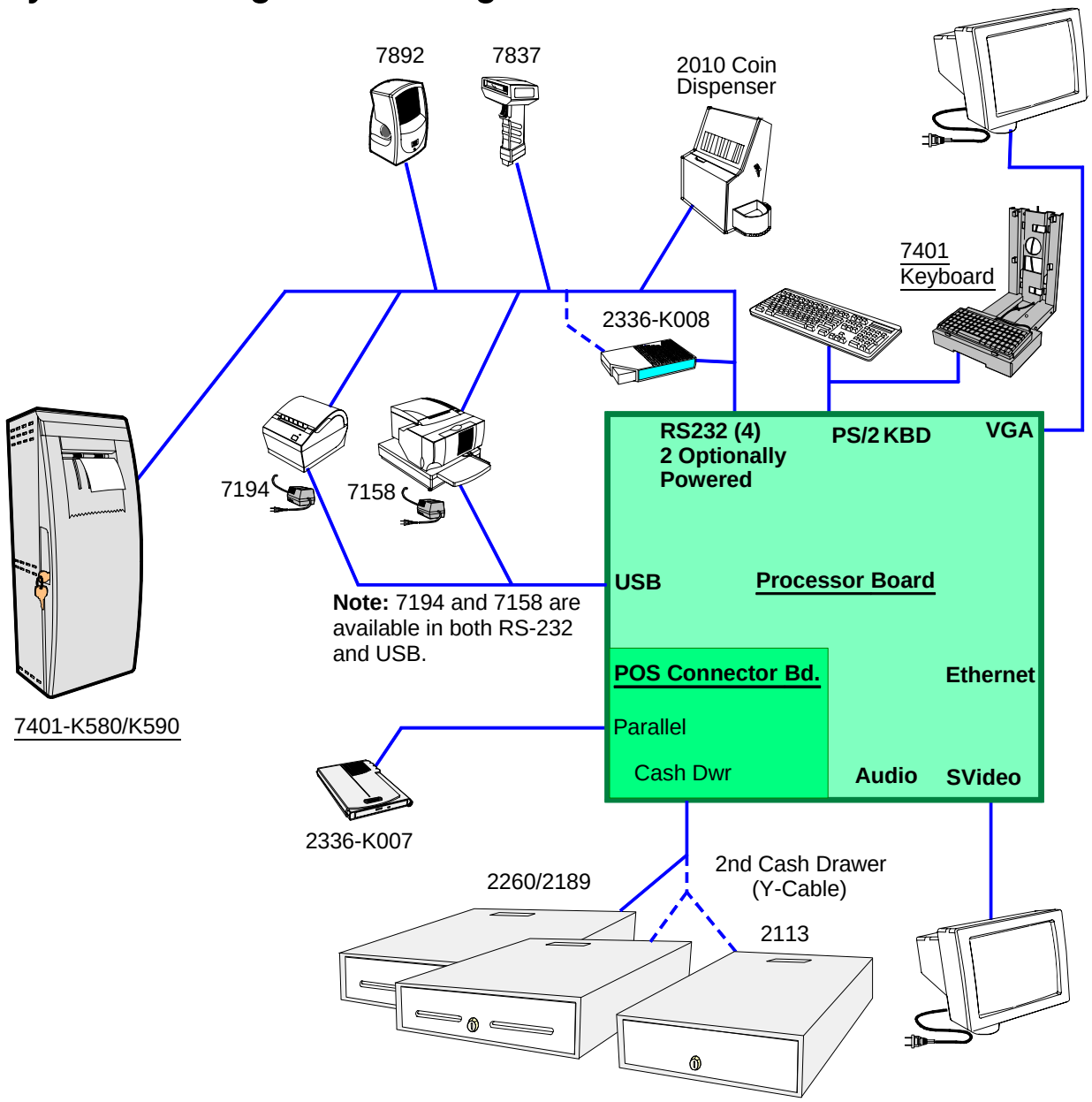
- 64/128/256 MB memory
- Cash drawers
  - 2113 Cash Drawer (modular)
  - 2189 Cash Drawer (modular)
  - 2260 Cash Drawer (modular)
  - Dual cash drawer cable
- Printers:
  - 7158 Thermal Receipt/Impact Printer
  - 7167 Thermal Receipt/Impact Printer
  - 7194 Thermal Receipt Printer
  - 7197 Thermal Receipt Printer
  - Remote printer cables
  - Signal extenders for remote printers
- 7401-K590 Self-Service Printer
- 7401-K580 Self-Service Printer (Discontinued)
- PC keyboard
  - Keyboard Shelf
- USB RS-232 Port Server
  - USB Serial Converter
- 4055 Uninterruptible Power System (UPS)

Terminal Components not Supported

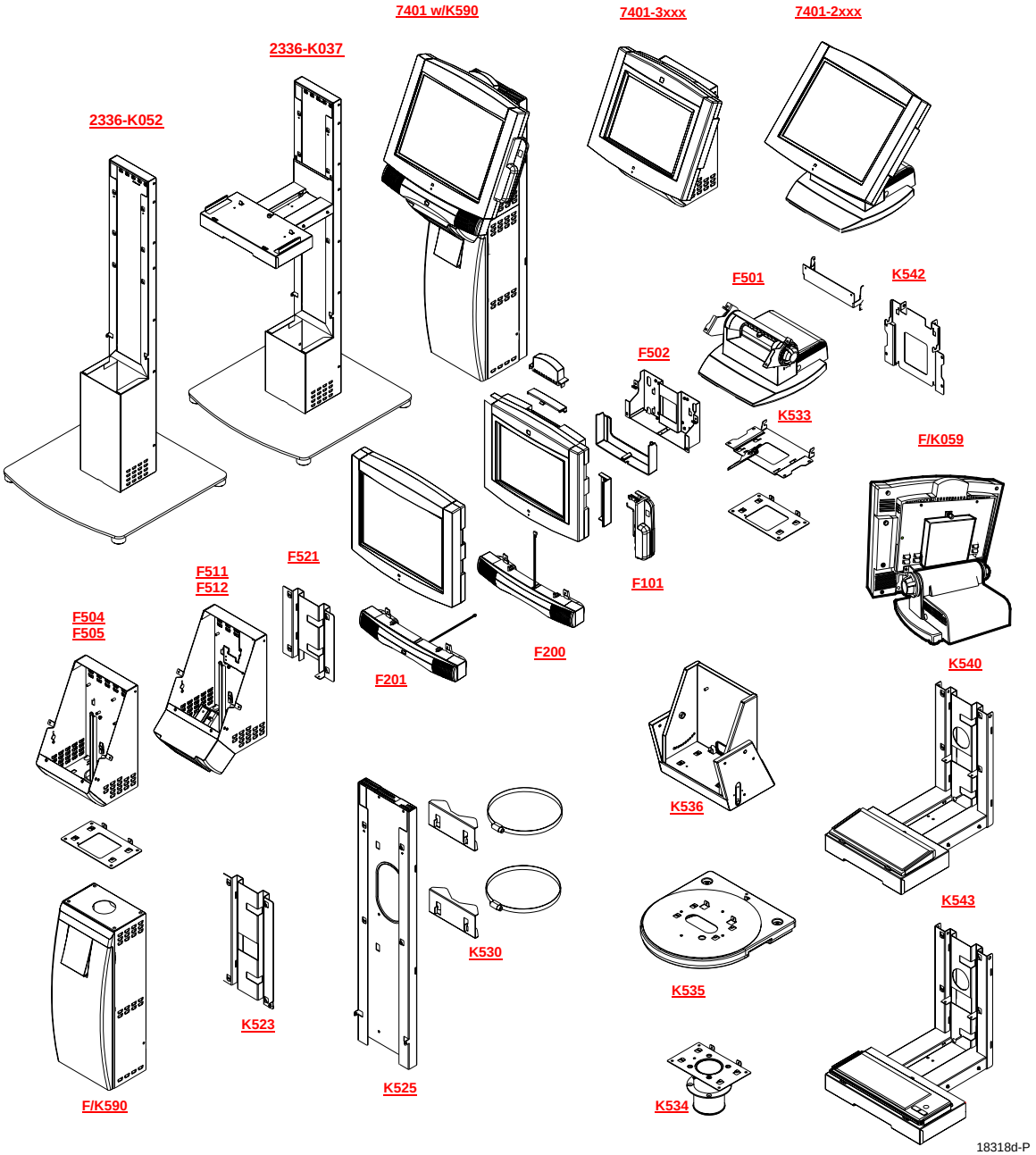
It is important to note that the terminal does not support the following components.

Not Supported	Alternative Implementation
CMOS for hard totals, logs, and tallies	Hard disk, flash disk, or server storage
Removable media, e.g., a flex disk	LAN communication to an NT server via standard protocols
SLP terminal loading	Local storage, TCP/IP networking and PXE loading
Keylock for security (X, L, R, S)	Reset switch based security
ISA and PCI Expansion slots	USB and LAN based devices (future)
DVD ROM	
Internal UPS	External UPS
Manual Video and audio controls	Software controlled
DOS, Windows 3.1, Windows NT 3.51, Windows 9x, OS/2	Windows NT 4.0, Windows 2000, Windows XPe
133 MHz/266 MHz Pentium Processor	Intel Pentium III 500/700 MHz and 1 GHz , and Celeron 450/550/600/700 MHz processors

System Configuration Diagram



Kit Configuration Diagram



Hardware Module Descriptions

Processor Board

Processor/Chip Set

The terminal uses an Intel architecture processor, which permits it to leverage existing software drivers and applications, as well as provide the greatest flexibility in choosing an operating system. This provides several other advantages:

- Capable of SW MPEG-1 or MPEG-2 playback at 30 frames per second with 22 kHz stereo audio (may be limited by OS constraints).
- SoundBlaster®-compatible audio
- Expansion capabilities for optional features and future requirements (ISA/PCI bus and USB)

The following sections identify processors, system bus speed, and on-board memory available on 7401 processor boards:

Release 1.0

- Intel Mobile Pentium 166 MHz or 266 MHz Processor (PGA package) used with the Intel 430TX PC chipset. The 430TX chipset consists of the 82439TX System Controller (North Bridge chip), also called the MTXC, and the 82371AB (South Bridge chip), also called the PIIX4.
- A 66 MHz system bus

  These Intel Mobile Pentium Processors have been discontinued.

Release 2.0 – 2.4

- Intel Pentium III 500 MHz or 700 MHz Processor, or Intel Celeron 450 MHz, 550 MHz, or 600 MHz Processor (µPGA package) used with the Intel 440BX PC chipset. The 440BX chipset consists of the 82440BX System Controller (North Bridge chip), also called the MTXC, and the 82371AB (South Bridge chip), also called the PIIX4.
- A 100 MHz system bus
- 64 MB memory with ability to add SODIMMS to increase the memory capacity of the terminal

Release 2.5

- Intel 700 MHz Celeron Processor or Intel 1 GHz Pentium III Processor (BGA package) on board, removing the µPGA processor socket. Intel 440BX chipset same as in Release 2.0 – 2.5.
- 100 MHz system bus and memory support, 64-bit bus width, and AGP video interface.
- 128 MB memory with ability to add SODIMMS to increase the memory capacity of the terminal

Video Subsystem

The video subsystem supports the following LCD types:

- 12.1-inch active matrix (TFT [thin film transistor]) 800x600 with 64 k colors
- 15-inch active matrix (TFT) 1024x760 with 64 k colors

Support for the LCD integrated display is provided internally. External support for SVGA monitors (800x600 [or better] resolution and 64 k [or better] colors) is provided by a CRT 15-Pin D-shell connector.

The LCD back lighting is also software controlled. In addition to OFF and ON modes, a *dimmed* mode is supported in the hardware to allow increased tube life. If appropriate software drivers are loaded, full brightness is restored when touched, motion detection (Motion Sensor section), or an application request (i.e., to play promotional material on a preset schedule).

Ethernet 10/100Base-T LAN Communications

The 7401 terminal has an Intel 82559 LAN Controller that supports 10/100Base-T Ethernet. Ethernet 100Base-T is also known as "Fast Ethernet." The Boot ROM for diskless boot functionality is included in the 1 MB system ROM. The hardware is compatible with the TCP/IP, DHCP, and TFTP protocols required for remote boot of the platform. Appropriate software must be used to enable each protocol used over the Ethernet link.

The terminal may be connected to either a 10 MB/s or 100 MB/s Ethernet connection. The hardware automatically selects the correct speed (if enabled by software to do so).

The LAN hardware supports wakeup packet capability as defined in the Device Class Power Management Specification, Network Device Class (available from Microsoft's web site).

When the platform is in the Soft OFF state (refer to the *Advanced Power Management* section that follows), receipt of a Wakeup Packet on the LAN can return the system to the ON state, if this feature is enabled by software.

Due to limitations of the LAN controller and the OS, all features described in the Network Device Class specification may not be available.

100Base-T is wired identically to 10Base-T, except that the twisted pair cable must be Category 5 and the hubs must permit 100 or 10/100 MB/s operation. Although 10Base-T will operate on Category 3 twisted pair, or NCR "747" cable, an upgrade to Category 5 is required for 100Base-T.

A customer desiring to use the terminal in an existing 10Base-T environment can do so and simply run at 10 MB. ***In order to upgrade to 100MB/s, Category 5 cable and 100 or 10/100 hubs must be installed.*** NCR strongly recommends the use of Category 5 for all new cabling, even if the customer initially intends to run only 10Base-T.

LED Indicators for Link Integrity (verifies cable and hub connection are good) and LAN speed is provided on the Processor Board near the row of connectors at the bottom of the e-box. The LED is ON (yellow) when the speed is running at 100 MB/s.

Link Integrity is provided to the PC chipset to permit boot-up software to verify the presence of the LAN connection. Software must allow 2 seconds after power-up in order for the Link Integrity signal to become valid.

Wireless LAN Communications

When a wired Ethernet connection is not desired, a wireless LAN adapter may be installed in the PCMCIA socket. This requires that the PCMCIA daughter-card feature be installed. A wireless LAN used in the terminal must meet the following requirements:

- Integrated antenna that meets the requirements of PCMCIA (PC Card) Extended Type 2 card definition (a maximum of 5-cm additional length).
- Power consumption within the capabilities of the PCMCIA daughter-card.
- Signaling requirements within the capabilities of the terminal PCMCIA interface. The main restriction is that DMA transactions are not supported over the PCMCIA interface.
- Device drivers for the targeted operating system must exist.
- Appropriate infrastructure (server support, Base Stations, Ceiling Antennas, etc) must be present in the installation site, and the maximum RF range of the wireless system must not be exceeded.

Interoperability - While the 802.11 standard provides an interoperable protocol definition, there are vendor-specific extensions to the protocol that encourage users to stay with one supplier's equipment. This also applies to wireless infrastructure and access points, 802.11 does not govern this operation. Mixing of RF suppliers on a site is not recommended until the RF suppliers have demonstrated interoperability.

The wireless networks operate at speeds of 1-2 MB/s with 2 percent packet loss typical. The application developer must be aware of the performance limitations and design applications that are acceptable to the customer when run over the slower network.

Remote Wakeup over the wireless network is not possible because the cards do not support it. An alternative is to use the system real-time clock wake up at a scheduled time.

The wired Ethernet connection is not certified for use in configurations where a wireless adapter is installed.

Universal Serial Bus

Two USB Type-A ports are provided on the terminal. USB Host Controller support is provided in hardware on the Processor Board.

Note: Third party USB peripherals require support from the operating system, which is currently limited to Windows 2000 and Windows Xpe. The terminal must use the I/O Networks drivers to support the NCR USB printer and scanner products. These drives are available under Windows NT, Windows 2000, and Windows XPe.

Serial Ports

The 7401 Release 2.x processor boards provide two RS-232 ports (9-pin D-shell connectors, Ports 1 and 2) directly on the board and support two additional RS-232 ports. Ports 3 and 4 require an optional harness connection to the processor board. Ports 1 and 3 can be supplied with +12 V DC on Pin 9 when properly set up in the BIOS. The total power drawn by Ports 1 and/or 3 must be no greater than 1 amp at 12 V+ DC. Refer to the following table for RS-232 pin-out information.

The BIOS permits flexibility in mapping resources. However, a fully-loaded system (2 PCMCIA cards that require IRQs, four serial ports in use, USB in use, parallel port in use, and MSR) may not have enough available IRQs to support all serial ports. Use a USB serial port expander to overcome this PC architecture limitation.

Port 2 shares hardware resources with the IRDA connection; if IRDA is in use, Port 3 is not available.

RS-232 DB-9 Male Connector Pinout		
Pin	Port A	Port B
1	DCD	DCD
2	RXD	RXD
3	TXD	TXD
4	DTR	DTR
5	GND	GND
6	DSR	DSR
7	RTS	RTS
8	CTS	CTS
9	RI or +12*	RI

* If Port 1 or 3 are powered, pin 9 will be +12 V.

Hardware Monitor

The hardware monitor generates an interrupt to the system whenever any of the internal voltages used by the system processor goes above or below the acceptable operating range. An interrupt is also generated when the temperature of the Processor exceeds safe levels. Software can use this indication to slow or stop the system and/or force a reset.

PCI Expansion Header

A single expansion header is provided to support optional features, such as the PCMCIA for Wireless LAN Board. This board supports two Type 2 or one Type 3 PCMCIA type cards.

IDE Header

A standard IDE header is provided to support the 2.5-inch hard disk drive and integrated CD-ROM. This header al supports the optional 256 MB IDE compact flash available in place of the hard disk.

Audio

The base unit has SoundBlaster-compatible audio. Wave table synthesis is not supported. FM synthesis and MIDI are supported in the hardware, but requires software driver support to function.

Higher quality integrated stereo speakers may be added as an option to the terminal. The amplifier is located on the Processor Board; the speaker output is provided on a header that receives the harness from the speaker module. In addition, a Line Out is provided on a 3.5 mm stereo jack that permits connection of external amplified speakers.

The integrated stereo speakers, or an amplifier connected to Line Out, must be used in order to play SoundBlaster (audio subsystem) audio. However, an internal EUI speaker provides PC speaker functionality (beeps and tones) for all configurations.

The volume control can be set during system configuration.

The PC speaker sounds (such as beeps and touch clicks) are directed into the audio subsystem and are audible if speakers are connected.

- Release 2.0 – 2.4 processor boards use a Cirrus/Crystal CS4614 (PCI-based) sound controller that supports DirectX 6 sound.
- Release 2.5 processor boards use an ESS Allegro ES1989 sound controller that supports DirectX 8 sound.

Magnetic Stripe Reader

A 3-track MSR head is available as an option. The ISO card format is supported.

When card data is read, an interrupt is generated. A software device driver for the MSR must be loaded to enable the application to process the data.

Touch Screen Controller

The MicroTouch "Excalibur" chip is used to interface the touch panel. This controller supports MicroTouch capacitive panels.

In order to save an RS-232 port, the touch data is delivered to the system through the mouse interface. This requires a mouse-aware touch device driver for the appropriate OS.

When the system is operating in the *dimmed* display mode, touch activity can restore full brightness if instructed by software to do so. When system is in *low power* mode, touch activity can generate the mouse port interrupt (IRQ12).

Processor Board Connectors

All connectors are either keyed or impossible to plug incorrectly due to mechanical design of the product.

External Connectors	Internal Connectors
VGA CRT RGB 15 pin D Shell	LCD
Ethernet RJ45	Back light Inverter
Dual USB Type A	Integrated Speaker Module
External Stereo speaker (3.5mm jack)	MSR
Power supply	Touch screen (PS/2)
RS-232 9 pin D shell (two, one with +12 V power option)	Integrated Scanner (7401)
PS/2 Keyboard	Motion Sensor / Power Indicator
Customer Display	PCI Expansion header
Cash Drawer	IDE
IRDA	Parallel port (POS Board header)
20-pin high density RS-232 Conversion connector	Cash Drawer port (POS Board header)
Microphone	
S-Video	

Flash Disk Interface (Discontinued)

The Release 2.0 – 2.5 processor boards provide support for a flash disk array in the form of an M-Systems *DiskOnChip*. A 32-pin socket is provided for this feature. The flash disk must be installed and enabled in *BIOS Setup*. This feature is not available on Release 2.5 processor boards.

NCR Retail Specific Hardware

The Processor Board contains logic that provides support for the custom retail interface. The logic controls the following features:

- Dual Cash Drawer Support
- Cash Drawer Diagnostic Support
- Magnetic Stripe Reader Interface
- Motion Detector
- Touch Screen Interface

Cash Drawer Support

An integrated retail specific feature of the processor is the cash drawer circuitry. The onboard circuitry internal to the board provides the control for two external cash drawers. A portion of the POS Board header (J6) is provided on the board to interface to the dual cash drawer connector. Header J6 only contains the control signals; it does not provide power. Software controls the cash drawer(s) through I/O port 00Exh. This means it can be I/O ports E0/E1h, E2/E3h, E4/E5h, or EA/EBh depending on the configuration of the SMC I/O controller's GPIO port(s). Default setting is E0/E1h.

Cash Drawer I/O Port Bit Definition:

Bit #	Description	Bit = 1	Bit = 0
7	Solenoid B Control	Turns off solenoid output	Activates solenoid output
6	Solenoid A Control	Turns off solenoid output	Activates solenoid output
5	Reserved	Reserved	Reserved
4	Reserved	Reserved	Reserved
3	Solenoid B Status	Solenoid B output active	Solenoid B output inactive
2	Solenoid A Status	Solenoid A output active	Solenoid A output inactive
1	Reserved	Reserved	Reserved
0	Cash Drawer(s) Status	Drawer(s) open	Drawer(s) closed

Note: Bits 2 and 3 are set to '1' by each device reset.

The cash drawer interface can be diagnosed remotely. For security reasons, the cash drawer diagnostics mode must first be activated by pressing an external momentary switch (SW2). The intention is for authorized personnel to be present when the cash drawer diagnostic tests take place.

There is only one cash drawer status signal; therefore, bit 0 is the status of either cash drawer or both cash drawers.

Power LED

The Processor Board provides support for an external power LED through the onboard Motion/Power LED connector. This LED is controlled through the SMC 37C935 GPIO pins. Once the SMC chip is programmed to support the Power LED function on GPIO pin 13, the LED will be turned "on" anytime all power to the Processor Board is good. The system's power management software has the option to turn the LED off indicating the system is in a power-managed mode.

MSR

The MSR interface supports a maximum of 3 tracks of magnetic stripe information for support of ISO format cards. Activate the MSR interface by enabling it in *BIOS Setup* under IO Configuration. The MSR interface controller is a memory-mapped device, which can reside at system memory addresses CA000, CC000, or D0000. If MSR capability is not desired, it may be disabled through *BIOS Setup*.

Graphics Subsystem

The Release 2.0 – 2.4 processor boards are equipped with an SMI Lynx SVGA LCD/CRT 3DM graphics controller with 8 MB of integrated synchronous graphics DRAM.

The Release 2.5 processor board has an SMI Lynx 3DM/3DM+ graphics controller.

The Processor Boards support linear addressing by creating a "hole" in the memory address space at the 63 MB boundary. When the system is configured for 64 MB and linear addressing is enabled, the last 1 MB of system memory is unusable; therefore, the board will report that total available system memory is 63 MB.

Because a hole in memory creates a non-contiguous address space, enabling linear addressing when total system DRAM is greater than 64 MB is not recommended. Video linear addressing is enabled through PC Setup under the Integrated Peripherals menu.

The processor also supports VESA standards such as the VESA DPMS protocol to place a DPMS compliant monitor into power savings modes.

Release 2.5 processor boards with the Lynx 3DM/3DM+ chip support the following *DirectX 6* Direct Draw and Direct 3D graphics functions.

- Rasterization acceleration
- Z buffer
- Alpha comparison
- Texture filtering
- Texture blending
- Mimap support
- Vertex and Global fogs
- Diffuse and specular color
- Alpha blending
- Triangle and line drawing

The following *DirectX 8* functions are not supported:

- TnL
- Vertex shader
- Pixel shader
- Bump mapping
- Box mapping

The Release 1.0 Pentium processor board was equipped with a C&T 69000/65555 SVGA LCD/CRT graphics controller with 2 MB of integrated synchronous graphics DRAM. The 69000/65555 is a 32-bit graphics controller that combines a VGA controller, 32-bit graphics engine, dual-frequency clock synthesizer, and true-color DAC in a single package. **This processor board has been discontinued.**

Resolutions Supported

Resolution	Colors	Max Vfreq
800x600x8bpp	256	85 Hz
800x600x16bpp	64 k	85 Hz
800x600x24bpp	16 M	85 Hz

Colors Supported

Resolution	256 Colors (8-Bit)	65,000 Colors (16-Bit)	16.7 M Colors (24-Bit)
800x600	512 k	1 MB	2 MB

Dual Displays

The Summa II Motherboard (Release 2.5) is dual display (LCD and CRT) capable. In a dual display environment the 7401 terminal supports 16-bit color when both displays are connected to the motherboard. Both displays must have the same maximum resolution capability. Refer to the following information for details about the implementation of a dual display configuration.

- *Lynx Family Control Panel Specification 1.2* on the NCR 74xx Base System and Client Third party Drivers CD-ROM (Product ID: D370-0111-0100) or in the `video.exe` self-extracting Video Drivers file on the Retail Solutions Specific Third Party Products *Drivers and Patches* web site at: http://www.ncr..com/support/support_drivers_patches.asp?Class=retail_TPP.
- *Retail Customer Information Display User's Guide* (BD20-1431-B) on the NCR Information Products web site at: http://www.info.ncr.com/eHome.cfm

Board BIOS

Processor boards use a Phoenix BIOS, which is stored in Flash ROM and easily upgraded through the network connection or serial port. The Flash EEPROM also contains the Setup utility, Power-On Self Tests (POST), and APM 1.2 (Release 2.0-2.4) or ACPI 2.0 (Release 2.5). The boards also supports system BIOS shadowing, permitting the BIOS to execute from onboard write-protected DRAM.

The BIOS displays a sign-on message during POST identifying the type of BIOS and a four-digit revision code.

FLASH memory Implementation

The Intel E28F800B5-T70 Flash component is organized onboard as 1024 k x 8 (1 MB). While a typical PC BIOS image including video and LAN boot ROM code normally fits in 256 kB on the Pentium board and 512 kB on the Pentium III/Celeron board, the boards support a 1 MB flash ROM. The current Phoenix BIOS release only requires 256 kB of this 1 MB total. The Flash device contains the PC System BIOS along with the Video BIOS and LAN boot ROM which compresses the ROM images into a single binary image.

The Flash device is divided into four areas, as described below.

System Address		FLASH Memory Area
F0000H	FFFFFH	64 kB Main BIOS
EE000H	EFFFFH	8 kB System BIOS Reserved during boot
ED000H	EDFFFH	4 kB Plug and Play ESCD Storage Area
E0000H	ECFFFH	52 kB System/VGA BIOS Reserved during boot

BIOS Upgrades

Flash memory makes distributing BIOS upgrades easy. A new version of the BIOS can be installed from the hard disk, network or through a serial port.

The disk-based Flash upgrade utilities, Phlash.exe and WinPhlash,exe, ensure the upgrade BIOS extension matches the target system to prevent accidentally installing a BIOS for a different type of system.

Setup Utility

The ROM-based Setup utility allows the system configuration to be modified without opening the system for most basic changes. The Setup utility is accessible only during the Power-On Self Test (POST) by pressing the <F2> key after the POST memory test has begun and before boot begins. A prompt may be enabled that informs users to press the <F2> key to access Setup.

An external alphanumeric keyboard is recommended for running the BIOS CMOS Setup Utility. Otherwise, a Touch Screen can be used.

Plug and Play

The Processor BIOS also has a setup option to support the Windows runtime plug and play utilities. When this option is selected, only devices critical to boot are assigned resources by the BIOS. Device Node information is available for all devices to ensure compatibility with Windows 95. System configuration information is stored in ESCD format. The ESCD data will be cleared upon loss of the CMOS voltage.

Advanced Power Management

The 7401 Release 2.0 – 2.4 Processor BIOS has support for both 1.1 and 1.2 Advanced Power Management (APM). The version of APM drivers loaded in the operating system determines to which specification the BIOS adheres. In either case, the energy saving Standby mode can be initiated by a time-out period set by the user.

When in Stand By mode, the Processor Board reduces power consumption by using the processor System Management Mode (SMM) capabilities and also spinning down hard drives and turning off VESA DPMS compliant monitors. During setup, the user may select which DPMS mode (Stand By, Suspend, Auto, or Off) is sent to the monitor. The ability to respond to external interrupts is fully maintained while in Stand By mode permitting the system to service requests such as in-coming data or network messages while unattended. Keyboard or mouse activity may also be used to take the system out of the energy saving Stand By mode. When this occurs, the monitor and IDE drives are turned back on immediately.

Advanced Power Management is achieved by the following:

- DOS requires a driver (FS-APM.dos)
- NT requires a driver (NCRSYSM.SYS)
- Windows 2000 must enable the operating system APM setting. The OS APM setting is disabled by default. NCR Gold Drivers are enabled in this setting by selecting:

  Start, Control Panel, Power Options, APM tab and check the box **Enable Advance Power Management Support**

  Click **Ok** to finish.

ACPI

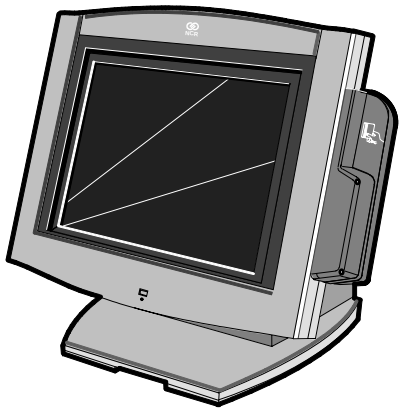
The Release 2.5 terminal BIOS supports Advance Configuration Power Interface (ACPI) 2.0 power management. Primary differences between APM and ACPI are as follows:

- On an APM- managed terminal, the BIOS determines when to switch between power states and also performs the switch. When using ACPI, the operating system determines when to switch and informs the BIOS to perform the switch.
- APM must be enabled in the BIOS. ACPI is automatically active with the operating system.
- ACPI Setup options are available in the OS Control Panel.

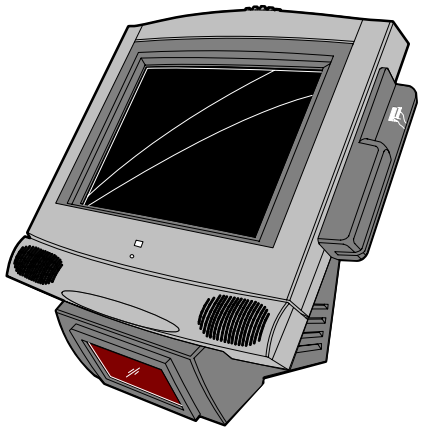
ACPI provides similar modes of operation as APM. The 7401 hardware supports four Power Management States.

State	Characteristics
OFF	AC power is not present. All RAM contents are lost.
ON • APM Auto state • ACPI G0/S0 Working state	Power is on and fully supplied to all 7401 components. The display and touch panel are active. The CPU may be fully on or be in *chip standby* mode. This is transparent to the user and the application. Standby mode reduces power requirements and is controlled by the chip set and is entered/exited depending on the CPU's utilization level. Transitioning between fully on and standby causes no delay.
CONSERVE • APM Standby state • ACPI G1/S1 Sleeping state	Power is on, but consumption is reduced by throttling back or completely stopping the system clock. Throttling is fully programmable. This is the primary means of reducing system power consumption and is used to help correct a high temperature warning level detected by the temperature monitor. Temperature may also be reduced by dimming the LCD. There is no user or application action required for this mode. When a *Safe Temperature* is detected, the system switches back to the ON state. Transitioning between ON and CONSERVE takes less than 10 milliseconds.
SOFT OFF • APM Suspend State • ACPI G2/S5 Soft Off state	*Temperature* has reached a critically high level, a *LAN-based Powerdown* was received, or a system Shutdown occurred. Power consumption is reduced to its lowest level. All voltages are still present, but BIOS places each peripheral and chip into its lowest available power state. The chip set enters the Suspend-to-RAM mode. The LCD back light is turned off, blanking the display. RAM contents are preserved upon return to ON state unless software issues a reset. If this state was entered because of a *LAN-based Powerdown* or system Shutdown, transitioning to the ON state can occur via LAN-based reset or wakeup, Timer wake-up, Touch activity, Motion Sensor, or keyboard. If SOFT OFF was entered because of a Critical Temperature, the ON state can be automatically transitioned to when a Safe Temperature is reached.

Operator Display



Tilt Mount



Fixed-Angle Mount 18289

The 7401-2xxx and 3xxx have either a 12.1-inch TFT (active matrix) or a 15-inch TFT.

LCD Adapter Board

The signals from the LCD header on the Processor Board are brought to the LCD on a harness. Since there are multiple pin configurations and connector types being used on the LCD, a small adapter board is used to receive the LCD harness and map the signals into the correct pin-out for the LCD panel. This board has a connector that plugs directly into the LCD panel.

LCD Backlight Inverter Module

An Inverter Board supplies power for the LCD Backlight, which is a separate module in the terminal. The inverter has a connector that receives power, ground, and a Backlight dimming signal from the Processor Board. The inverter generates the high voltage necessary to start and run dual CCFL (cold-cathode fluorescent lamps) Backlights.

A fuse located on the Inverter Board protects power to the inverter. This fuse protects the system from damage in the event of a Backlight or Inverter Board fault. The fuse is not field replaceable; if it blows, the safety characteristics of one or more components on the Inverter Board may have been compromised and the Inverter Board should be replaced.

If one or both Backlight tubes become disconnected or otherwise open-circuited, protection circuitry shuts down the inverter. This avoids over-powering a single tube and also protects against high voltage shorting.

The Backlight tubes for the Active displays (TFT) can be replaced.

Touch Screen

The Touch Screen completely covers the LCD and is mounted directly in front of the LCD, behind the front plastic bezel of the terminal. The touch controller on the Processor Board supports capacitive and resistive touch glass.

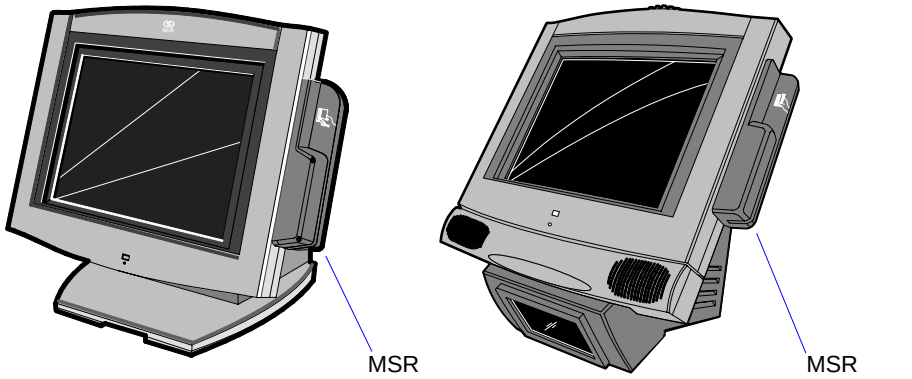
The touch glass has an integrated harness that is routed into the Processor Board enclosure and is connected to a header on the Processor Board.

The touch glass has a glare-reducing texture that also helps hide fingerprints.

Features

Magnetic Stripe Reader

A single 3-track analog MSR is available as a feature, supporting ISO format cards. When the MSR is not desired, a filler piece for the MSR section is included to make the unit appear uniform.

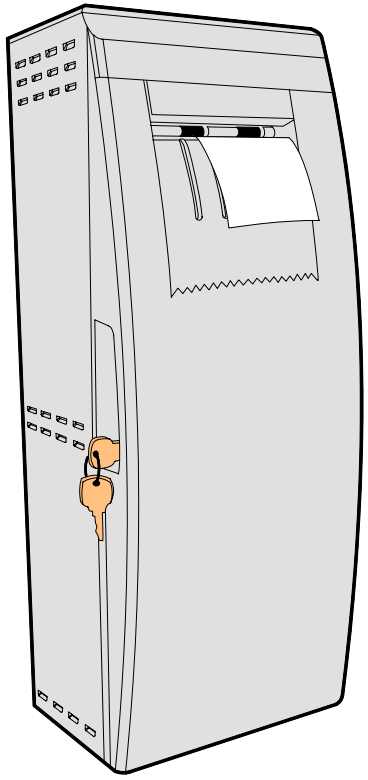


Printer Options

The sections that follow provide an illustration and brief description of the available printer options.

7401-K590 Self-Service Printer

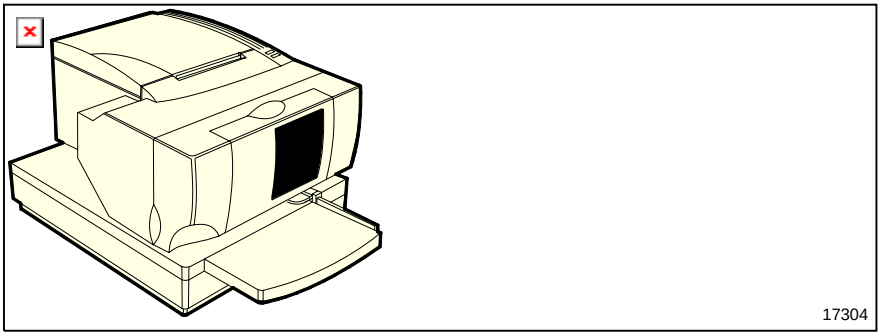
The K590 Printer is a self-service, fast, silent, thermal printer that provides "unattended printing." The printer is housed in a secure cabinet that does not allow customer access to the paper while it is printing. It can print text, graphics and bar codes. It prints on paper that is 80 mm, 82.5 mm, or 114 mm wide. When printing is complete, a receipt presenter provides the cut receipt. The printer receives its power from an external power supply and has a serial interface.



19055

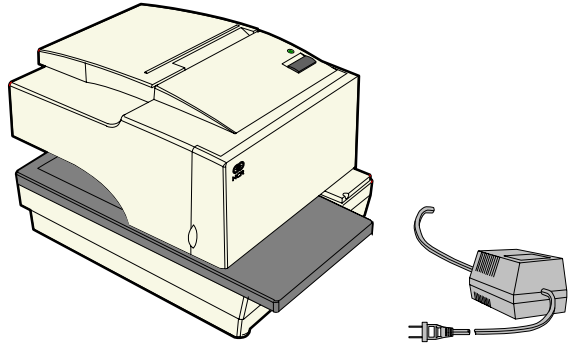
7158 Printer

The 7158 Printer is extremely fast, quiet, and reliable point-of-sale device. It consists of two specialized printers in one compact package: a thermal printer on top that prints receipts, and an impact slip printer in front to print on forms and checks that you insert. It receives its power from an external power supply, can be connected through a USB or serial port, and has a connector for cash drawers.



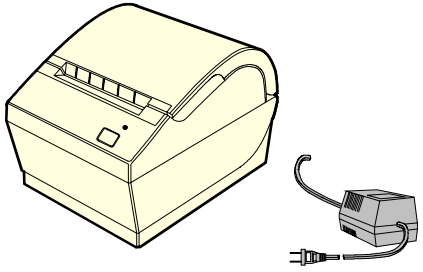
7167 Printer

The NCR 7167 Printer is a fast, quiet, relatively small and very reliable multi-function printer. It prints receipts, validates and prints checks, and prints on a variety of single or multiple part forms. There is no journal as it is kept electronically by the host terminal. The printer features a dual interface, so it can connect to the host terminal either through a USB interface or RS-232. It receives its power from an external power supply, and has a connector for cash drawers.



7194 Printer

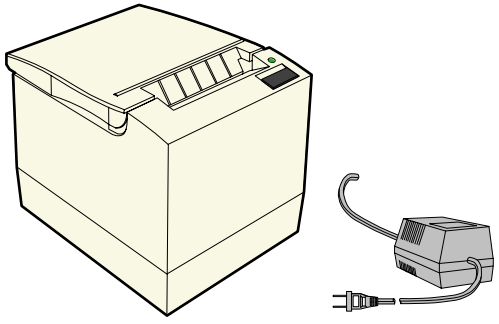
The 7194 Printer is a high speed, high-resolution printer, capable of both text and graphics printing. It offers direct thermal printing in a receipt station. It receives its power from an external power supply, can be connected through a USB or serial port, and has a connector for cash drawers.



16437

7197 Printer

The NCR 7197 Printer is a fast, quiet, relatively small and very reliable multi-function printer. It prints receipts and two-color printing. The printer features a dual interface, so it can connect to the host terminal either through a USB interface or RS-232. It receives its power from an external power supply, and has a connector for cash drawers.



19712e

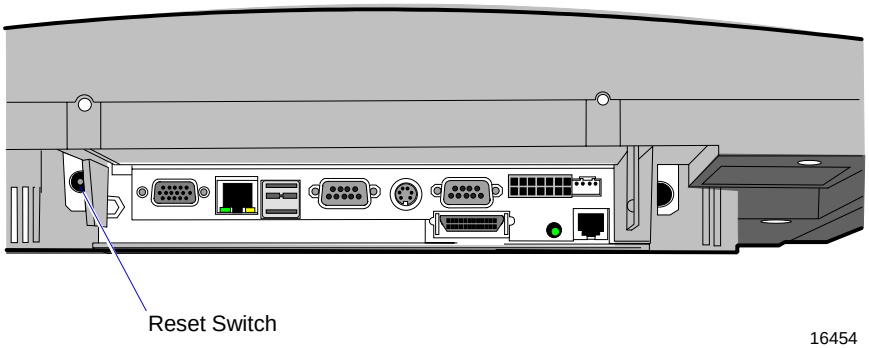
Other Integrated Devices and Indicators

Hard Disk Drive

A 2.5-inch IDE hard disk is available to support Windows NT. The drive is the standard type that is used by notebook PCs.

Reset Switch

As a last resort, the Reset Switch can be used to reboot the system if the software reset port mechanisms fail. The switch is on the connector row at the bottom of the enclosure. Intentionally, it is not easily accessible, but can be operated without removing covers or using special tools.



Except when testing software in a lab environment, always disconnect the AC power cord.

Reset Procedure

1. Gently press the Reset Switch and hold it in for at least four seconds. The screen goes blank.
2. Release the Reset Switch and then gently press it again. The system reboots.

Internal Speaker

The Internal Speaker is connected to the PC speaker output of the system chipset, not to the audio subsystem. It is connected to the Processor Board via a harness and mounted inside the Processor Board enclosure.

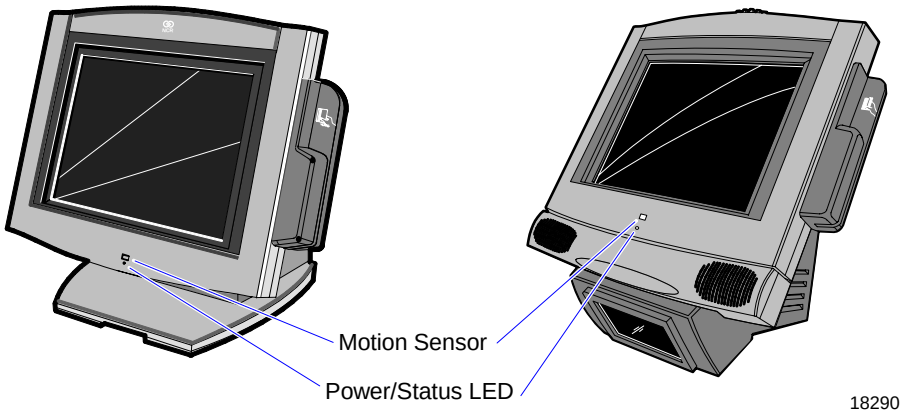
POS Connector Board

The POS Connector Board is a small daughter board that mounts directly on the Cash Drawer and Parallel Port header. Connectors on the edge of this board form a second connector row above the Processor Board connectors. Connectors are available for two cash drawers, a customer display and a microphone.

Power for the cash drawers (24 V) and VFD customer display (5 V and 12 V) is supplied by the Enhanced Power Supply through the parallel connector.

Motion Sensor

The terminal hardware can detect movement near the terminal and enables software to prompt system operation from a low-power state. Application software may also be able to make use of motion detection when in the ON state if it is enabled by lower-level software.



Motion is detected as a change in ambient light level that is greater than a software-controlled threshold.

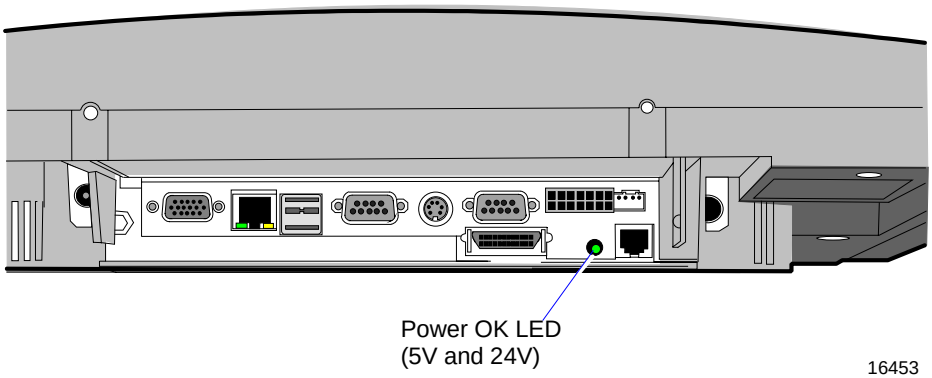
A photodiode mounted behind the front bezel of the unit senses ambient light levels. The photodiode resides on a small circuit board (the Motion Sensor Board). A harness connects the Motion Sensor Board to the amplifier and motion sensing logic on the Processor Board. The user Power/Status LED indicator shares this board.

Power/Status LED

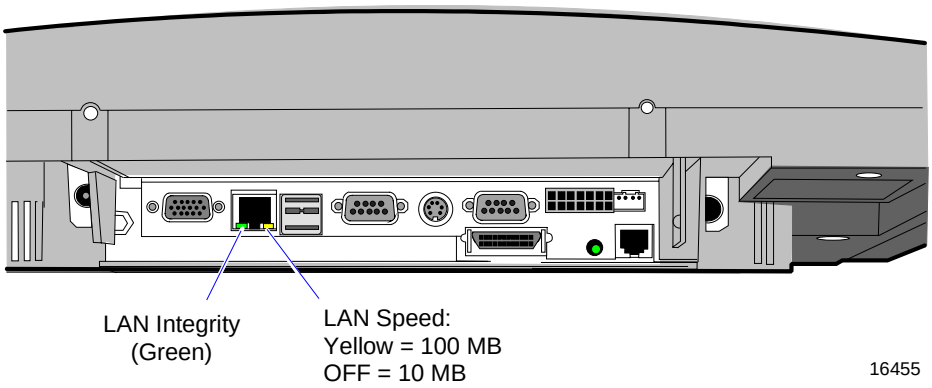
The LED power indicator indicates that power is present. The LED is green when the processor and BIOS are operating properly. The LED is mounted behind the front bezel on the same board as the motion sensor.

Power OK LED

The Power OK LED is located behind the Cable Cover, between the Customer Display and Cash Drawer connectors.



LAN Status LEDs



Power Supply

The terminal uses an AC adapter for its power supply, concealed in the terminal mounting. The supply is inaccessible when the terminal is in the normal operation and mounting position to prevent tampering, and sealed to help protect against spills or other environmental hazards.

Note: The power supply automatically senses the proper AC voltage; therefore only normal servicing access is required.

All power required to operate the base unit, PCMCIA option and PCMCIA cards, speaker option, scanner option, and bus-powered USB peripherals is provided by the power supply.

The Processor Board serves as the hub to distribute power to all terminal functions. Cash drawers, VFD customer display, PS/2 keyboard, PCMCIA daughter board and slots, scanner (through RS-232 port), USB, hard disk, and the LCD all receive power through their respective Processor Board connectors.

Uninterruptible Power System (Optional)

The 4055 Uninterruptible Power System (UPS) protects your equipment from various power related problems, providing visual and audible indicators which alert you to utility-line failures. The 4055 is installed inside the pedestal mount, and includes a data line/LAN connection which ensures both the AC and data paths are protected from surges and noise transmitted through the power lines.

Integrated Scanner Module (Optional)

The scanner, power supply, and Scanner Controller Board are located inside the Fixed-Angle Mount. The scanner interface is serial, and is connected to RS-232/1, which is a *powered* serial port.

Note: The Integrated Scanner feature includes the Fixed-Angle Mount and cannot be used with the Table Top Mount.

The 7401 Scanner is a modified NCR 7890 or NCR 7892 Scanner, however, there are a few differences. Refer to the *NCR 7401/7890 or 7892 Scanner Differences* chapter for additional information.

Integrated Speaker Module (Optional)

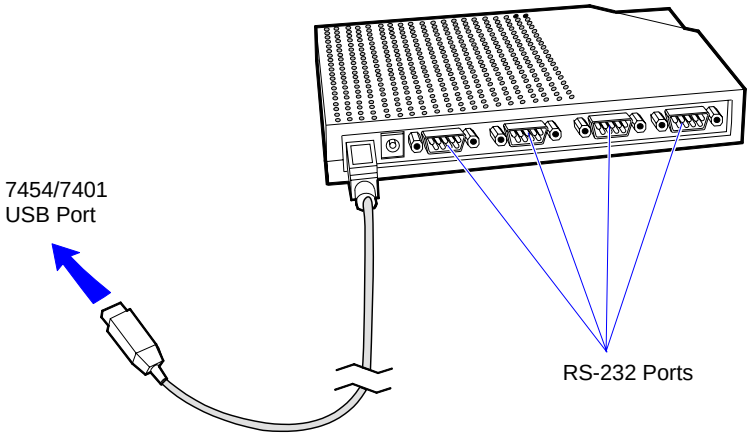
The Integrated Speaker feature provides two stereo speakers that attach to the bottom of the Core Module. The maximum output of the speakers is approximately 6 watts per channel.

Compact Flash (Optional)

The 256MB compact flash can be used in a Windows XP embedded environment. When using the Windows XP embedded OS, an additional 128MB SDRAM SODIMM is required to support the necessary virtual memory requirements. The 256MB compact flash replaces the hard drive in the unit.

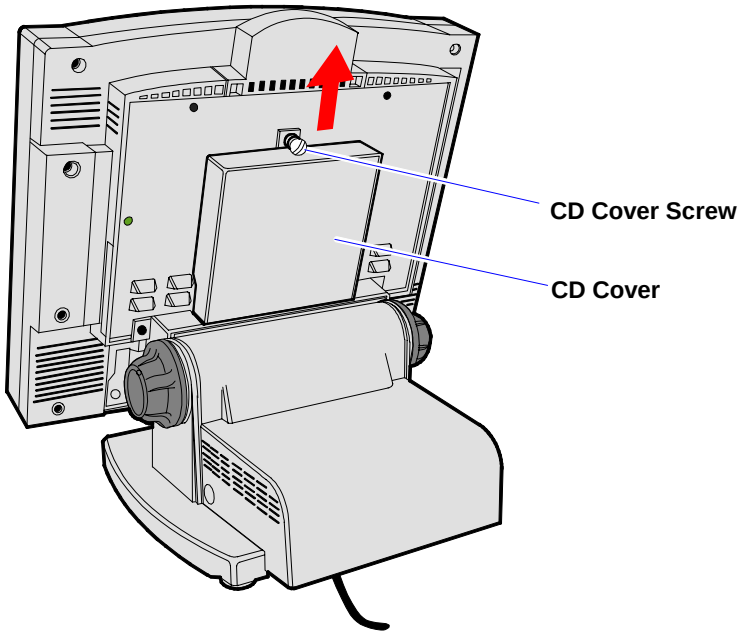
USB RS-232 Port Server

The USB RS-232 Port Server is an intelligent, stackable expansion module that connects to the terminal Universal Serial Bus (USB) port, providing high-speed RS-232 serial ports.



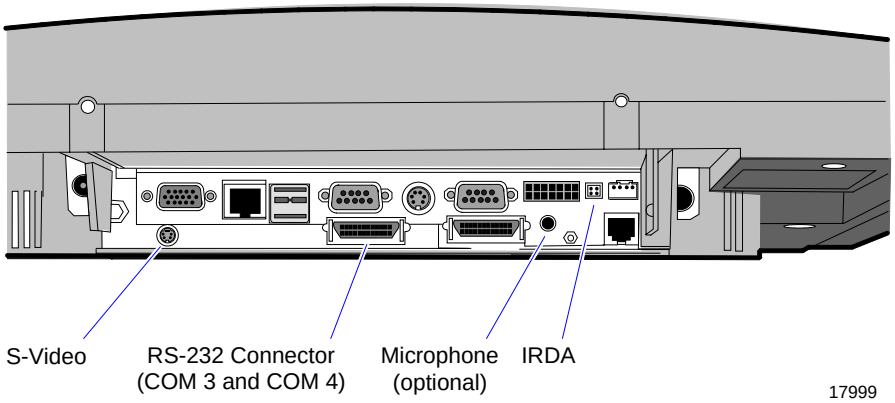
Integrated CD-ROM Drive (Tilt Mount Model)

The Integrated CD-ROM Drive is located behind a cover on the Back Panel. To access the drive, loosen the spring-loaded CD Cover Screw and remove the CD Cover by sliding it up as shown.



Additional Connectors (Pentium III Board)

The Pentium III Boards have three connectors that are not on the other Pentium Boards. Also available is a fourth connector for a microphone when a POS Connector Board is mounted to the Processor Board. The following illustration identifies these connectors.



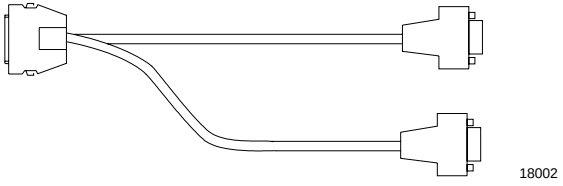
The following is a brief description of each connector.

S-Video

This connector provides a video connection to an S-video monitor.

RS-232 Connector

This connector provides two additional RS-232 ports. To add the ports, install the *Dual RS-232 Port Kit* (7454-F072) as described in the Feature Kits appendix. The Dual RS-232 Cable provides two additional serial ports.



Microphone

This connector provides for audio input.

IRDA

This connector permits infrared communication between devices.

Compatibility

LAN Communications

The software associated with the terminal systems conform to the following standards:

- Network Driver Interface Specification (NDIS 4)
- IEEE 802.3 & 802.3u CSMA/CD (10/100 MB/s Ethernet)
- IEEE 802.2 Link Level Control (LLC)
- TCP/IP

Application Programmability

The software associated with the terminal systems conform to the following standards:

- OLE for Retail POS 1.4
- JavaPOS for Retail 1.4
- HTML 4.0
- ECMA Script
- Java Development Kit 1.1.3

Operating System Information

The software associated with the terminal systems conform to the following standards:

- Microsoft Windows NT
- Microsoft Windows 2000
- Windows Xpe

Migration

Retail Applications

- Existing TAPS-based applications are not supported. These applications must be migrated to Windows NT.
- Existing Windows 3.11-based NICE applications are not supported. These applications must be migrated to Windows NT.
- Existing OPOS-based applications can be supported on terminals running Windows NT.
- Windows NT, Windows 2000, and Windows XPe are the only supported operating systems.

Retail Peripherals

Since the system is a dedicated platform with limited expansion capability, a limited subset of the retail peripherals is supported. No support is provided for the following peripheral types:

- OCIA Peripherals
- RS-485 Peripherals
- Wedge Keyboard
- Operator Line Display

Retail Systems

This release of software does not support the following features found in previous retail systems:

Platform

- ISA Cards
- Standard PCI Cards
- Multi-port Serial
- Memory Dump

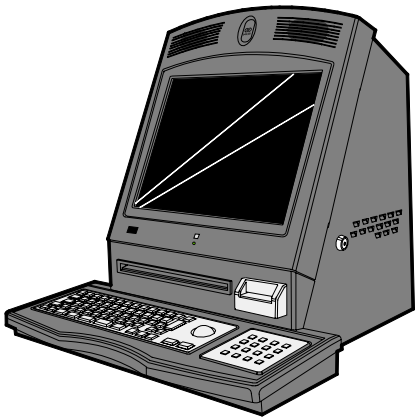
Networks

- M-11
- StarLAN
- 10base2 Ethernet
- Token Ring
- NetBEUI /Net BIOS
- NetWare

Platform Load

- SLP, SLF, RPL
- PCMCIA Disk, PCMCIA Flash Disk

Chapter 2: 7401-4xxx Product Overview



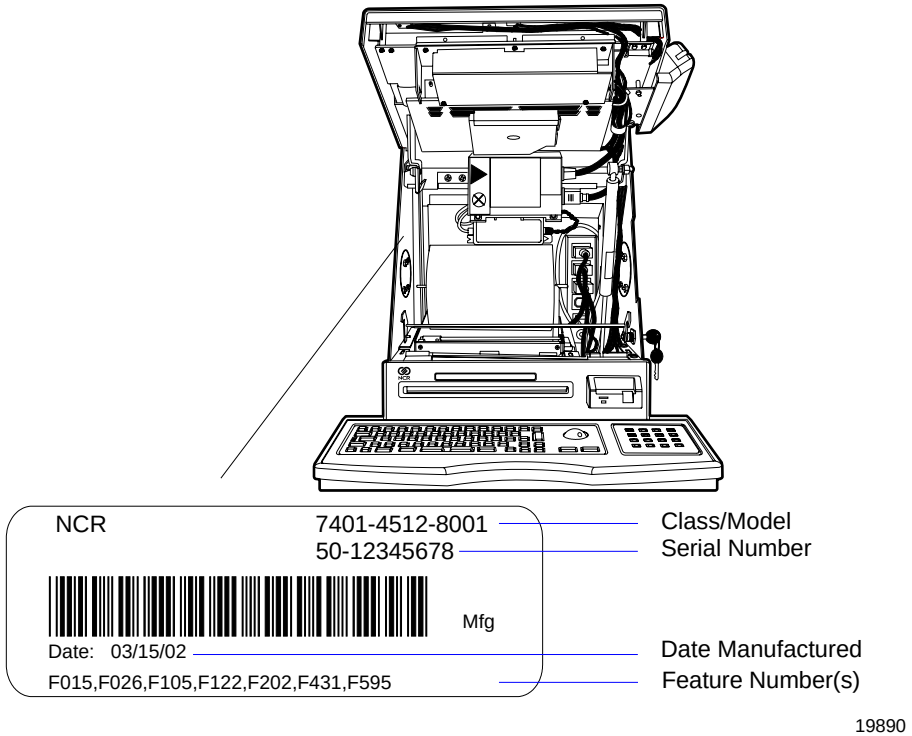
19889d

Introduction

The 7401-4xxx model is a ruggedized version ideal for unattended use in financial environments. The major hardware features of this model are a 15 inch flat panel display with touch screen input, LAN connectivity, stereo audio, an integrated secure cabinet, an 80-column printer, a motorized MSR or card-swipe MSR, an integrated Pin Pad, and the integrated rugged keyboard with trackball.

Serial Number/Model Number Label

The unit's serial number, model number, tracer number, and date of manufacture are included on a label located inside the cabinet on the left side above the printer module.



7401-4xxx Model Numbers

7401-4512	15-in. Capacitive LCD, CD-ROM, 4 Serial Ports, Parallel Port, Ethernet Cable
7401-4665	15-in. Capacitive LCD, CD-ROM, 4 Serial Ports, Parallel Port, Ethernet Cable, Celeron 700 MHz, and 10 GB HDD
7401-4675	15-in. Capacitive LCD, CD-ROM, 4 Serial Ports, Parallel Port, Ethernet Cable, PIII 1 GHz, and 20 GB HDD

Hardware Modules

Base Unit

- Processor Board
  - Pentium III/Celeron processor
  - XGA chipset (15-inch monitor)
  - MPEGII chipset
  - 1 MB Flash BIOS (not CMOS)
  - Four RS-232 ports (two optionally powered)
  - 10/100BaseT Ethernet LAN chipset, Wake-on-LAN support, and RJ-45 port
  - PC Audio with an internal mono speaker
  - SoundBlaster® 16 compatible audio chipset
  - Two USB type A ports
  - PS/2 keyboard port
  - External VGA display port
  - Dual display support
  - External stereo speaker port
  - Internal PS/2 mouse (dedicated to the touch screen)
  - One SODIMM (Small Outline DIMM) RAM socket
  - 64 MB memory on board
  - IDE support for a hard disk, a CD ROM, and an optional flash disk
- POS Connector Board
  - Internal parallel port (dedicated to the optional customer display)
  - Microphone
- 15-inch Operator Display – active LCD with capacitive or resistive touch

- 2.5-inch low or high capacity hard disk
- Integrated Motion Sensor, capable of waking up the terminal from a low power state
- Integrated CD-ROM
- Integrated Infrared Sensor
- Integrated Power Supply
- Full Page Printer
- Reset switch which can be used to recover from a lock-up condition
- Table-top mount
- 3-meter Ethernet cable
- U.S. power cord

Hardware Options

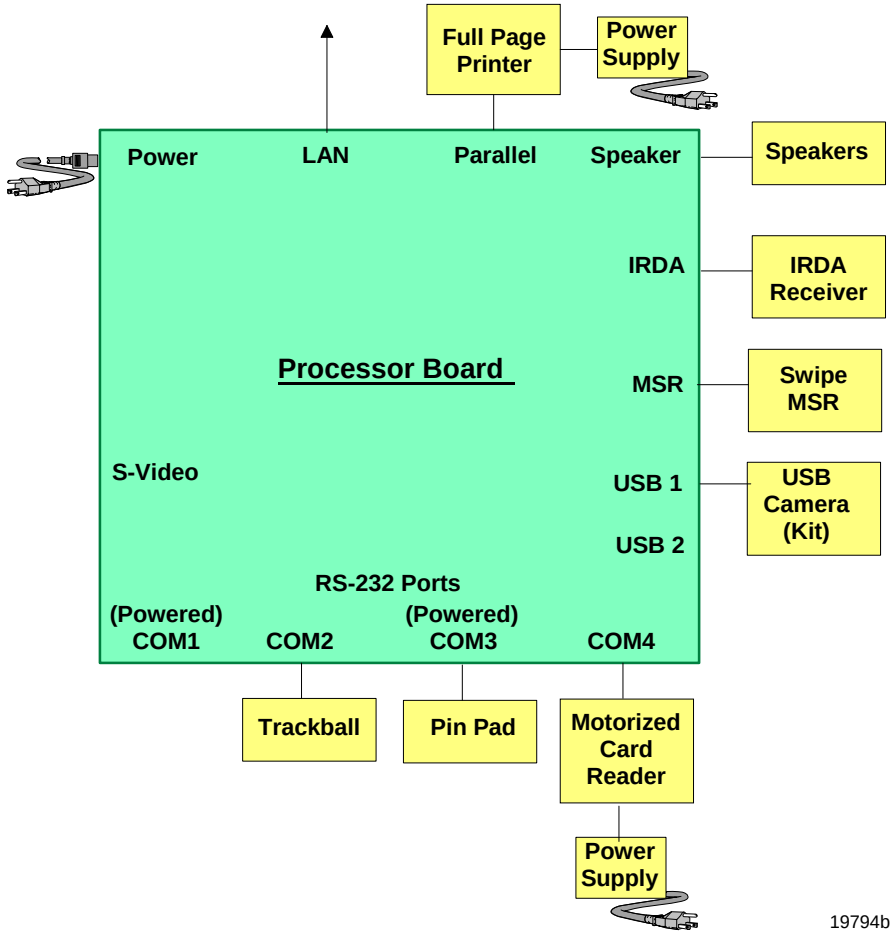
- Integrated 3-track ISO MSR
- Motorized Card Reader
- 64/128 MB or 256 MB memory
- 256 MB Compact Flash
- Ruggedized Keyboard
- Pin Pad
- Trackball

Terminal Components not Supported

It is important to note that the terminal does not support the following components.

Not Supported	Alternative Implementation
CMOS for hard totals, logs, and tallies	Hard disk, compact flash, or server storage
Removable media, e.g., a flex disk	LAN communication to an NT server via standard protocols
SLP terminal loading	Local storage, TCP/IP networking and PXE loading
Keylock for security (X, L, R, S)	Reset switch based security
ISA and PCI Expansion slots	USB and LAN based devices (future)
DVD ROM	
Internal UPS	External UPS
Manual Video and audio controls	Software controlled
DOS, Windows 3.1, Windows NT 3.51, Windows 9x, OS/2	Windows NT 4.0, Windows 2000, Windows XPe
133/266 MHz Pentium Processors	Intel Pentium III 500/700 MHz, 1 GHz, and Celeron 450/550/600/700 MHz processors

System Configuration Diagram



Hardware Module Descriptions

Processor Board

Processor/Chip Set

The terminal uses an Intel architecture processor, which permits it to leverage existing software drivers and applications, as well as provide the greatest flexibility in choosing an operating system. This provides several other advantages:

- Capable of SW MPEG-1 or MPEG-2 playback at 30 frames per second with 22 kHz stereo audio (may be limited by OS constraints).
- SoundBlaster®-compatible audio
- Expansion capabilities for optional features and future requirements (ISA/PCI bus and USB)

Release 2.4

- Intel Pentium III 500 MHz or 700 MHz Processor, or Intel Celeron 550 MHz or 600 MHz Processor (µPGA package) used with the Intel 440BX PC chipset. The 440BX chipset consists of the 82440BX System Controller (North Bridge chip), also called the MTXC, and the 82371AB (South Bridge chip), also called the PIIX4.
- A 100 MHz system bus
- 64 MB memory with ability to add SODIMMS to increase the memory capacity of the terminal

Release 2.5

- Intel 700 MHz Celeron Processor or Intel 1 GHz Pentium III Processor (BGA package) on board, removing the μPGA processor socket. Intel 440BX chipset same as in Release 2.4
- 100 MHz system bus and memory support, 64-bit bus width, and AGP video interface.
- 128 MB memory with ability to expand like Release 2.4.

Video Subsystem

The video subsystem supports the following LCD types:

- 15-inch active matrix (TFT) 768x1024 with 64 k colors

Support for the LCD integrated display is provided internally. External support for SVGA monitors (800x600 [or better] resolution and 64 k [or better] colors) is provided by a CRT 15-Pin D-shell connector.

The LCD back lighting is also software controlled. In addition to OFF and ON modes, a *dimmed* mode is supported in the hardware to allow increased tube life. If appropriate software drivers are loaded, full brightness is restored when touched, motion detection (Motion Sensor section), or an application request (i.e., to play promotional material on a preset schedule).

Ethernet 10/100Base-T LAN Communications

The 7401-4xxx terminal has an Intel 82559 LAN Controller that supports 10/100Base-T Ethernet. Ethernet 100Base-T is also known as "Fast Ethernet." The Boot ROM for diskless boot functionality is included in the 1 MB system ROM. The hardware is compatible with the TCP/IP, DHCP, and TFTP protocols required for remote boot of the platform. Appropriate software must be used to enable each protocol used over the Ethernet link.

The terminal may be connected to either a 10 MB/s or 100 MB/s Ethernet connection. The hardware automatically selects the correct speed (if enabled by software to do so).

The LAN hardware supports wakeup packet capability as defined in the Device Class Power Management Specification, Network Device Class (available from Microsoft's web site).

When the platform is in the Soft OFF state (refer to the *Advanced Power Management* section that follows), receipt of a Wakeup Packet on the LAN can return the system to the ON state, if this feature is enabled by software.

Due to limitations of the LAN controller and the OS, all features described in the Network Device Class specification may not be available.

100Base-T is wired identically to 10Base-T, except that the twisted pair cable must be Category 5 and the hubs must permit 100 or 10/100 MB/s operation. Although 10Base-T will operate on Category 3 twisted pair, or NCR "747" cable, an upgrade to Category 5 is required for 100Base-T.

A customer desiring to use the terminal in an existing 10Base-T environment can do so and simply run at 10 MB. ***In order to upgrade to 100MB/s, Category 5 cable and 100 or 10/100 hubs must be installed.*** NCR strongly recommends the use of Category 5 for all new cabling, even if the customer initially intends to run only 10Base-T.

LED Indicators for Link Integrity (verifies cable and hub connection are good) and LAN speed is provided on the Processor Board near the row of connectors at the bottom of the e-box. The LED is ON (yellow) when the speed is running at 100 MB/s.

Link Integrity is provided to the PC chipset to permit boot-up software to verify the presence of the LAN connection. Software must allow 2 seconds after power-up in order for the Link Integrity signal to become valid.

Wireless LAN Communications

When a wired Ethernet connection is not desired, a wireless LAN adapter may be installed in the PCMCIA socket. This requires that the PCMCIA daughter-card feature be installed. A wireless LAN used in the terminal must meet the following requirements:

- Integrated antenna that meets the requirements of PCMCIA (PC Card) Extended Type 2 card definition (a maximum of 5-cm additional length).
- Power consumption within the capabilities of the PCMCIA daughter-card.
- Signaling requirements within the capabilities of the terminal PCMCIA interface. The main restriction is that DMA transactions are not supported over the PCMCIA interface.
- Device drivers for the targeted operating system must exist.
- Appropriate infrastructure (server support, Base Stations, Ceiling Antennas, etc) must be present in the installation site, and the maximum RF range of the wireless system must not be exceeded.

Interoperability - While the 802.11 standard provides an interoperable protocol definition, there are vendor-specific extensions to the protocol that encourage users to stay with one supplier's equipment. This also applies to wireless infrastructure and access points, 802.11 does not govern this operation. Mixing of RF suppliers on a site is not recommended until the RF suppliers have demonstrated interoperability.

The wireless networks operate at speeds of 1-2 MB/s with 2 percent packet loss typical. The application developer must be aware of the performance limitations and design applications that are acceptable to the customer when run over the slower network.

Remote Wakeup over the wireless network is not possible because the cards do not support it. An alternative is to use the system real-time clock wake up at a scheduled time.

Depending on the OS environment, Remote Boot may be supported, but due to the slow network speed a large boot image may take an unacceptably long time to load. The application developer needs to ensure that the load is of reasonable size.

The wired Ethernet connection is not certified for use in configurations where a wireless adapter is installed.

Universal Serial Bus

Two USB Type-A ports are provided on the terminal. USB Host Controller support is provided in hardware on the Processor Board.

Note: Third party USB peripherals require support from the operating system, which is currently limited to Windows 2000 and Windows Xpe. The terminal must use the I/O Networks drivers to support the NCR USB printer and scanner products. These drives are available under Windows NT, Windows 2000, and Windows XPe.

Serial Ports

The 7401-4xxx Celeron/Pentium III processor board provides two RS-232 ports (9-pin D-shell connectors, Ports 1 and 2) directly on the board and supports two additional RS-232 ports. Ports 3 and 4 require an optional harness connection to the board. Ports 1 and 3 can be supplied with +12 V DC on Pin 9 when properly set up in the BIOS. The total power drawn by Ports 1 and/or 3 must be within the limits of the capabilities of the power supply. Refer to the following table for RS-232 pin-out information.

The BIOS permits flexibility in mapping resources. However, a fully-loaded system (2 PCMCIA cards that require IRQs, four serial ports in use, USB in use, parallel port in use, and MSR) may not have enough available IRQs to support all serial ports. Use a USB serial port expander to overcome this PC architecture limitation.

Port 2 shares hardware resources with the IRDA connection; if IRDA is in use, Port 3 is not available.

RS-232 DB-9 Male Connector Pinout		
Pin	Port A	Port B
1	DCD	DCD
2	RXD	RXD
3	TXD	TXD
4	DTR	DTR
5	GND	GND
6	DSR	DSR
7	RTS	RTS
8	CTS	CTS
9	RI or +12*	RI

* If Port 1 or 3 are powered, pin 9 will be +12 V.

Hardware Monitor

The hardware monitor generates an interrupt to the system whenever any of the internal voltages used by the system processor goes above or below the acceptable operating range. An interrupt is also generated when the temperature of the Processor exceeds safe levels. Software can use this indication to slow or stop the system and/or force a reset.

PCI Expansion Header

A single expansion header is provided to support optional features, such as the PCMCIA for Wireless LAN Board. This board supports two Type 2 or one Type 3 PCMCIA type cards.

IDE Header

A standard IDE header is provided to support a 2.5-inch hard disk drive and an integrated CD-ROM. This header al supports the optional 256 MB IDE compact flash available in place of the hard disk.

Audio

The base unit has SoundBlaster-compatible audio. Wave table synthesis is not supported. FM synthesis and MIDI are supported in the hardware, but requires software driver support to function.

Higher quality integrated stereo speakers may be added as an option to the terminal. The amplifier is located on the Processor Board; the speaker output is provided on a header that receives the harness from the speaker module. In addition, a Line Out is provided on a 3.5 mm stereo jack that permits connection of external amplified speakers.

The integrated stereo speakers, or an amplifier connected to Line Out, must be used in order to play SoundBlaster (audio subsystem) audio. However, an internal EUI speaker provides PC speaker functionality (beeps and tones) for all configurations.

The volume control can be set during system configuration.

The PC speaker sounds (such as beeps and touch clicks) are directed into the audio subsystem and are audible if speakers are connected.

- Release 2.0 – 2.4 processor boards use a Cirrus/Crystal CS4614 (PCI-based) sound controller that supports DirectX 6 sound.
- Release 2.5 processor boards use an ESS Allegro ES1989 sound controller that supports DirectX 8 sound.

Magnetic Stripe Reader

A 3-track MSR head is available as an option. The ISO card format is supported.

When card data is read, an interrupt is generated. A software device driver for the MSR must be loaded to enable the application to process the data.

Touch Screen Controller

The MicroTouch "Excalibur" chip is used to interface the touch panel. This controller supports MicroTouch capacitive panels.

In order to save an RS-232 port, the touch data is delivered to the system through the mouse interface. This requires a mouse-aware touch device driver for the appropriate OS.

When the system is operating in the *dimmed* display mode, touch activity can restore full brightness if instructed by software to do so. When system is in *low power* mode, touch activity can generate the mouse port interrupt (IRQ12).

Processor Board Connectors

All connectors are either keyed or impossible to plug incorrectly due to mechanical design of the product.

External Connectors	Internal Connectors
VGA CRT RGB 15 pin D Shell	LCD
Ethernet RJ45	Back light Inverter
Dual USB Type A	Integrated Speaker Module
External Stereo speaker (3.5mm jack)	MSR
Power supply	Touch screen (PS/2)
RS-232 9 pin D shell (two, one with +12 V power option)	Integrated Scanner (7401)
PS/2 Keyboard	Motion Sensor / Power Indicator
Customer Display	PCI Expansion header
Cash Drawer	IDE
IRDA	Parallel port (POS Board header)
20-pin high density RS-232 Conversion connector	Cash Drawer port (POS Board header)
Microphone	
S-Video	

Flash Disk Interface (Discontinued)

The 7401-45xx processor board provides support for a flash disk array in the form of an M-Systems *DiskOnChip*. A 32-pin socket is provided for this feature. The flash disk must be installed and enabled in *BIOS Setup*. This feature is not available on the 7401-46xx processor boards.

NCR Retail Specific Hardware

The 7401-4xxx Processor Board contains logic that provides support for the custom retail interface. The logic controls the following features:

- Magnetic Stripe Reader Interface
- Motion Detector
- Touch Screen Interface

MSR

The MSR interface supports a maximum of 3 tracks of magnetic stripe information for support of ISO format cards. Activate the MSR interface by enabling it in *BIOS Setup* under IO Configuration. The MSR interface controller is a memory-mapped device, which can reside at system memory addresses CA000, CC000, or D0000. If MSR capability is not desired, it may be disabled through *BIOS Setup*.

Power LED

The Processor Board provides support for an external power LED through the onboard Motion/Power LED connector. This LED is controlled through the SMC 37C935 GPIO pins. Once the SMC chip is programmed to support the Power LED function on GPIO pin 13, the LED will be turned "on" anytime all power to the Processor Board is good. The system's power management software has the option to turn the LED off indicating the system is in a power-managed mode.

Graphics Subsystem

The 7401-45xx processor boards are equipped with a SMI Lynx SVGA LCD/CRT 3DM graphics controller with 8 MB of integrated synchronous graphics DRAM. The 7401-46xx processor boards have an SMI Lynx 3DM/3DM+ graphics controller.

The processor boards support linear addressing by creating a "hole" in the memory address space at the 63 MB boundary. When the system is configured for 64 MB and linear addressing is enabled, the last 1 MB of system memory is unusable; therefore, the board will report that total available system memory is 63 MB.

Because a hole in memory creates a non-contiguous address space, enabling linear addressing when total system DRAM is greater than 64 MB is not recommended. Video linear addressing is enabled through PC Setup under the Integrated Peripherals menu.

The processor also supports VESA standards such as the VESA DPMS protocol to place a DPMS compliant monitor into power savings modes.

Resolutions Supported

Resolution	Colors	Max Vfreq
800x600x8bpp	256	85 Hz
800x600x16bpp	64 k	85 Hz
800x600x24bpp	16 M	85 Hz

Colors Supported

Resolution	256 Colors (8-Bit)	65,000 Colors (16-Bit)	16.7 M Colors (24-Bit)
800x600	512 k	1 MB	2 MB

DirectX Support

7401-46xx processor boards with the Lynx 3DM/3DM+ chip support the following *DirectX 6* Direct Draw and Direct 3D graphics functions.

- Rasterization acceleration
- Z buffer
- Alpha comparison
- Texture filtering
- Texture blending
- Mimap support
- Vertex and Global fogs
- Diffuse and specular color
- Alpha blending
- Triangle and line drawing

The following *DirectX 8* functions are not supported:

- TnL
- Vertex shader
- Pixel shader
- Bump mapping
- Box mapping

Dual Displays

The 7401-46xx processor boards are dual display (LCD and CRT) capable. In a dual display environment the 7401 terminal supports 16-bit color when both displays are connected to the motherboard. Both displays must have the same maximum resolution capability. Refer to the following information for details about the implementation of a dual display configuration.

- *Lynx Family Control Panel Specification 1.2* on the NCR 74xx Base System and Client Third party Drivers CD-ROM (Product ID: D370-0111-0100) or in the `video.exe` self-extracting Video Drivers file on the Retail Solutions Specific Third Party Products *Drivers and Patches* web site at:
  http://www.ncr..com/support/support_drivers_patches.asp?Class=retail_TPP.
- *Retail Customer Information Display User's Guide* (BD20-1431-B) on the NCR Information Products web site at:
  http://www.info.ncr.com/eHome.cfm

Board BIOS

Processor boards use a Phoenix BIOS, which is stored in Flash ROM and easily upgraded through the network connection or serial port. The Flash EEPROM also contains the Setup utility, Power-On Self Tests (POST), and APM 1.2 (7401-45xx) or ACPI 2.0 (7401-46xx). The boards also supports system BIOS shadowing, permitting the BIOS to execute from onboard write-protected DRAM.

The BIOS displays a sign-on message during POST identifying the type of BIOS and a four-digit revision code.

FLASH memory Implementation

The Intel E28F800B5-T70 Flash component is organized onboard as 1024 k x 8 (1 MB). While a typical PC BIOS image including video and LAN boot ROM code normally fits in 256 kB on the Pentium board and 512 kB on the Pentium III/Celeron board, the boards support a 1 MB flash ROM. The current Phoenix BIOS release only requires 256 kB of this 1 MB total. The Flash device contains the PC System BIOS along with the Video BIOS and LAN boot ROM which compresses the ROM images into a single binary image.

The Flash device is divided into four areas, as described below.

System Address		FLASH Memory Area
F0000H	FFFFFH	64 kB Main BIOS
EE000H	EFFFFH	8 kB System BIOS Reserved during boot
ED000H	EDFFFH	4 kB Plug and Play ESCD Storage Area
E0000H	ECFFFH	52 kB System/VGA BIOS Reserved during boot

BIOS Upgrades

Flash memory makes distributing BIOS upgrades easy. A new version of the BIOS can be installed from the hard disk, network or through a serial port.

The disk-based Flash upgrade utilities, Phlash.exe and WinPhlash.exe, ensure the upgrade BIOS extension matches the target system to prevent accidentally installing a BIOS for a different type of system.

Setup Utility

The ROM-based Setup utility allows the system configuration to be modified without opening the system for most basic changes. The Setup utility is accessible only during the Power-On Self Test (POST) by pressing the <F2> key after the POST memory test has begun and before boot begins. A prompt may be enabled that informs users to press the <F2> key to access Setup.

An external alphanumeric keyboard is recommended for running the BIOS CMOS Setup Utility. Otherwise, a Touch Screen can be used.

Plug and Play

The Processor BIOS also has a setup option to support the Windows runtime plug and play utilities. When this option is selected, only devices critical to boot are assigned resources by the BIOS. Device Node information is available for all devices to ensure compatibility with Windows 95. System configuration information is stored in ESCD format. The ESCD data will be cleared upon loss of the CMOS voltage.

Advanced Power Management

The 7401-45xx processor BIOS has support for 1.2 Advanced Power Management (APM). The version of APM drivers loaded in the operating system by the user will determine to which specification the BIOS will adhere. In either case, the energy saving Standby mode can be initiated by a time-out period set by the user.

When in Stand By mode, the Processor Board reduces power consumption by utilizing the processor System Management Mode (SMM) capabilities and also spinning down hard drives and turning off VESA DPMS compliant monitors. During setup, the user may select which DPMS mode (Stand By, Suspend, Auto, or Off) is sent to the monitor.

The ability to respond to external interrupts is fully maintained while in Stand By mode allowing the system to service requests such as incoming data or network messages while unattended**.** The user may also make any keyboard or mouse activity to take the system out of the energy saving Stand By mode**.** When this occurs, the monitor and IDE drives are turned back on immediately.

Advanced Power Management (APM) is achieved by the following:

- DOS requires a driver (FS-APM.dos)
- NT requires a driver (NCRSYSM.SYS)
- Windows 2000 must enable the operating system APM setting. The OS APM setting is disabled by default. NCR Gold Drivers are enabled in this setting by selecting:

  Start, Control Panel, Power Options, APM tab and check the box **Enable Advance Power Management Support**

  Click **Ok** to finish.

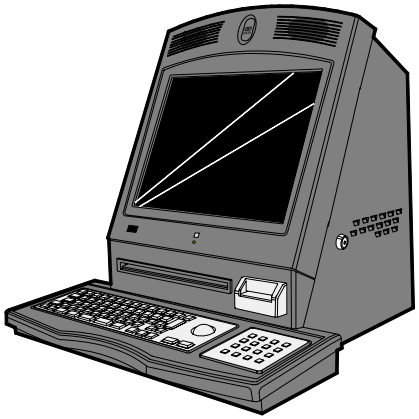
ACPI

The 7401-46xx terminal BIOS supports Advance Configuration Power Interface (ACPI) 2.0 power management. Primary differences between APM and ACPI are as follows:

- On an APM- managed terminal, the BIOS determines when to switch between power states and also performs the switch. When using ACPI, the operating system determines when to switch and informs the BIOS to perform the switch.
- APM must be enabled in the BIOS. ACPI is automatically active with the operating system.
- ACPI Setup options are available in the OS Control Panel.

Refer to the table in the *ACPI* section of "Chapter 2: 7401-2xxx and 3xxx Product Overview" for a comparison of the operation modes (states) supported by APM and ACPI power management.

Operator Display



19889d

The 7401-4xxx has a 15-inch TFT (thin film transistor) 1024x760 with 65 K colors display.

LCD Adapter Board

The signals from the LCD header on the Processor Board are brought to the LCD on a harness. Since there are multiple pin configurations and connector types being used on the LCD, a small adapter board is used to receive the LCD harness and map the signals into the correct pin-out for the LCD panel. This board has a connector that plugs directly into the LCD panel.

LCD Backlight Inverter Module

An Inverter Board supplies power for the LCD Backlight, which is a separate module in the terminal. The inverter has a connector that receives power, ground, and a Backlight dimming signal from the Processor Board. The inverter generates the high voltage necessary to start and run dual CCFL (cold-cathode fluorescent lamps) Backlights.

A fuse located on the Inverter Board protects power to the inverter. This fuse protects the system from damage in the event of a Backlight or Inverter Board fault. The fuse is not field replaceable; if it blows, the safety characteristics of one or more components on the Inverter Board may have been compromised and the Inverter Board should be replaced.

If one or both Backlight tubes become disconnected or otherwise open-circuited, protection circuitry shuts down the inverter. This avoids over-powering a single tube and also protects against high voltage shorting.

The Backlight tubes for the Active displays (TFT) can be replaced.

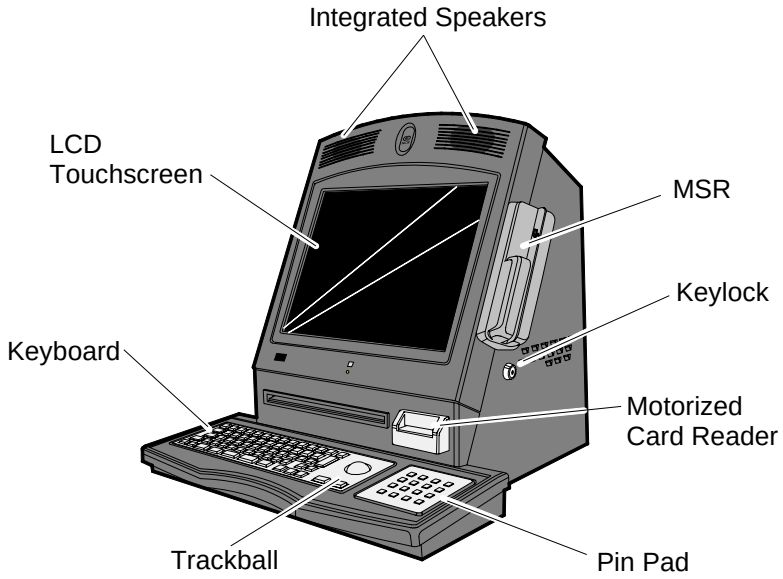
Touch Screen

The Touch Screen completely covers the LCD and is mounted directly in front of the LCD, behind the front plastic bezel of the terminal. The touch controller on the Processor Board supports capacitive and resistive touch glass.

The touch glass has an integrated harness that is routed into the Processor Board enclosure and is connected to a header on the Processor Board.

The touch glass has a glare-reducing texture that also helps hide fingerprints.

Features



Secure Cabinet with Integrated Speakers

The 7401-4xxx cabinet has an anti-vandal keylock that secures the cabinet in a closed position. The cabinet has no exposed screws, however, the rear of the cabinet is designed to accept brackets for signage and branding. Supervisory and service personnel can unlock the cabinet to replace the paper roll or perform maintenance on the terminal. Integrated stereo speakers are included in the top of the 7401-4xxx Bezel that surrounds the LCD Touch Screen module.

Ruggedized Keyboard with Trackball

The 7401-4xxx terminal has an anti-vandal, spill resistant keyboard with trackball. The keyboard cover and keys, and the trackball are constructed of heavy duty, non-destructive metal to withstand the extra use that occurs in unattended environments. U.S. and U.K. keyboard layouts are available as features. Other country-specific keyboard layouts are available as kits. The Keyboard and Trackball are mounted in a keyboard tray that slides forward when the cabinet is open to permit easier access to the inside of the terminal for service personnel.

For 7401-4xxx terminals with a U.K. keyboard (F130, F131, or F132), changes are required to the Regional Settings in the Control Panel. Refer to Chapter 4 for details.

Pin Pad

A secure anti-vandal pin pad, constructed of non-destructive metal is available as a feature. The Pin Pad with 10 numeric and 6 function keys is integrated into the keyboard tray next to the keyboard and trackball. The Pin Pad has a 64 KB memory for application use and 64 KB for data storage. It has programmable protocols and speeds (1200-19200 bps). When the personal identification number (PIN) is entered, the Pin Pad combines the PIN with the card data, encrypts this information, and sends it to the host for verification. This device has a serial interface and is powered by a COM Port C. The *Port C Powered Port* option must be set in the BIOS. The Pin Pad is pre-configured for encryption by an authorized encryption facility before it is integrated into the keyboard. OPOS support is not available with the Pin Pad

Motorized Card Reader

An optional Motorized Card Reader is available to provide MSR card-reading functionality similar to an ATM. When inserted, the card is fed into the reader and is retained there until the transaction is complete. The Motorized Card Reader has on-board intelligence to process Magstripe Cards, Smart Cards, and Memory Cards:

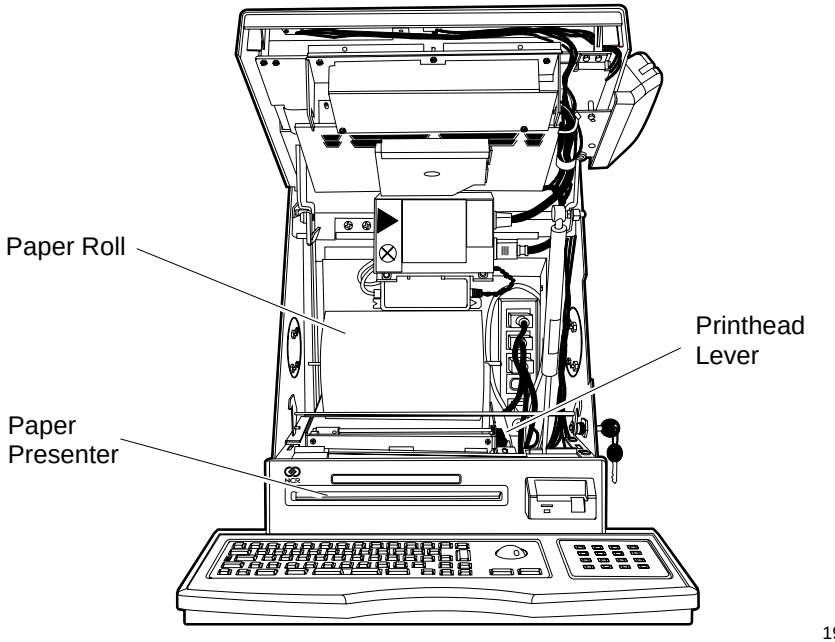
- Supports bi-directional read of magnetic stripe data (3-track)
- Reads and writes all ISO 7816 T=0, T=1 micro-processor Smart Cards
- Accepts cards with CP8 and ISO positions
- The card reader uses a vendor-provided Windows Driver. OPOS support is not available with the motorized card reader.
- This device is powered by a 12 VDC power supply.

Magnetic Stripe Reader

A single 3-track analog MSR is available as a feature, supporting ISO format cards. When the MSR is not desired, a filler piece for the MSR section is included to make the unit appears uniform.

Full Page Printer

The 7401-4xxx has a full page thermal sheet printer that provides high resolution 300 dpi (11.81 dots per mm) printing with a loop presenter and cutter.



- The printer uses a large 6 in. diameter paper roll (650 ft. at 3.2 Mil thickness) with selectable paper widths from 165 mm to 216 mm (6.5 in. to 8.5 in.).
- A Registration Mark sensor is supported for setting paper lengths.
- Printer sensors provide alerts for paper out, paper low, paper in presenter, Printhead temperature, Printhead level position, and paper jam.
- The Printer uses a vendor-provided Windows Driver. OPOS support is not available with the full page printer.
- This device is powered by a 24 VDC power supply.

Other Integrated Devices and Indicators

Hard Disk Drive

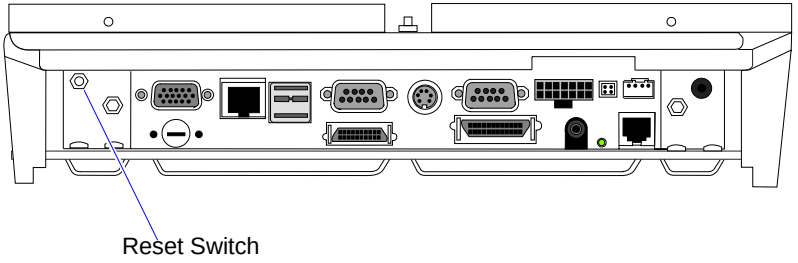
A 2.5-inch IDE hard disk is available to support Windows NT. The drive is the standard type that is used by notebook PCs.

Integrated CD-ROM

An integrated CD-ROM is mounted to the back of the core module behind the LCD Touch Screen inside the cabinet. The CD-ROM is used to install terminal software and can be used for other functions requiring a CD-ROM.

Reset Switch

As a last resort, the Reset Switch can be used to reboot the system if the software reset port mechanisms fail. The switch is on the connector row at the bottom of the enclosure. Intentionally, it is not easily accessible, but can be operated without removing covers or using special tools.



Except when testing software in a lab environment, always disconnect the AC power cord.

Reset Procedure

1. Gently press the Reset Switch and hold it in for at least four seconds. The screen goes blank.
2. Release the Reset Switch and then gently press it again. The system reboots.

Compact Flash

The 256MB compact flash can be used in a Windows XP embedded environment. When using the Windows XP embedded OS, an additional 128MB SDRAM SODIMM is required to support the necessary virtual memory requirements. The 256MB compact flash replaces the hard drive in the unit.

Internal Speaker

The Internal Speaker is connected to the PC speaker output of the system chipset, not to the audio subsystem. It is connected to the Processor Board via a harness and mounted inside the Processor Board enclosure.

POS Connector Board

The POS Connector Board is a small daughter board that mounts directly on the Cash Drawer and Parallel Port header. Connectors on the edge of this board form a second connector row above the Processor Board connectors. Connectors are available for two cash drawers, a customer display and a microphone.

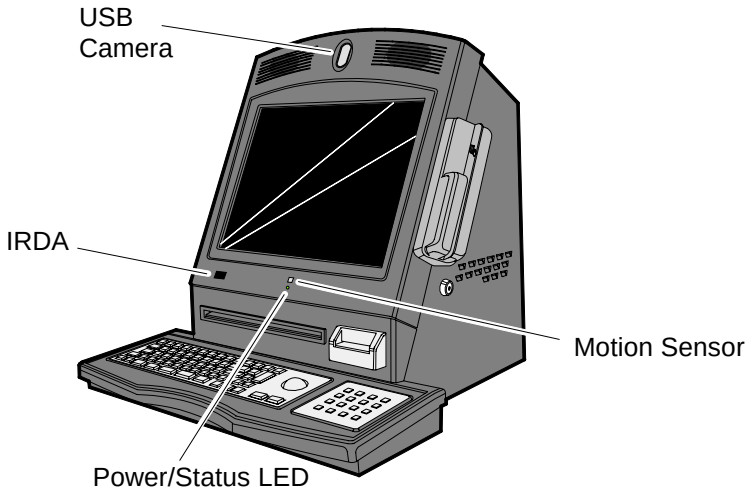
Power for the cash drawers (24 V) and VFD customer display (5 V and 12 V) is supplied by the Enhanced Power Supply through the parallel connector.

USB Camera

The integrated USB Camera (available as a kit) supports the capture of a video image of individuals operating the EasyPoint 7401-46xx terminal.

Motion Sensor

The terminal hardware can detect movement near the terminal and enables software to prompt system operation from a low-power state. Application software may also be able to make use of motion detection when in the ON state if it is enabled by lower-level software.



Motion is detected as a change in ambient light level that is greater than a software-controlled threshold.

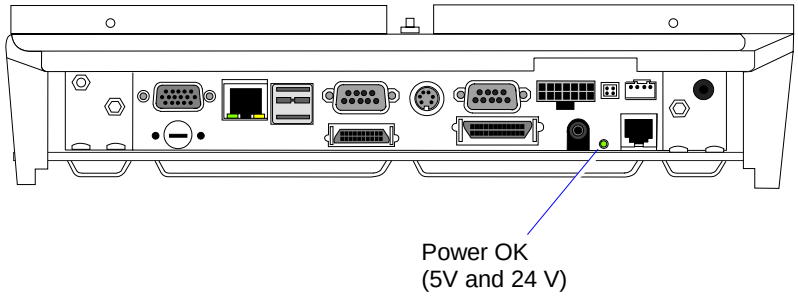
A photodiode mounted behind the front bezel of the unit senses ambient light levels. The photodiode resides on a small circuit board (the Motion Sensor Board). A harness connects the Motion Sensor Board to the amplifier and motion sensing logic on the Processor Board. The user Power/Status LED indicator shares this board.

Power/Status LED

The LED power indicator indicates that power is present. The LED is green when the processor and BIOS are operating properly. The LED is mounted behind the front bezel on the same board as the motion sensor.

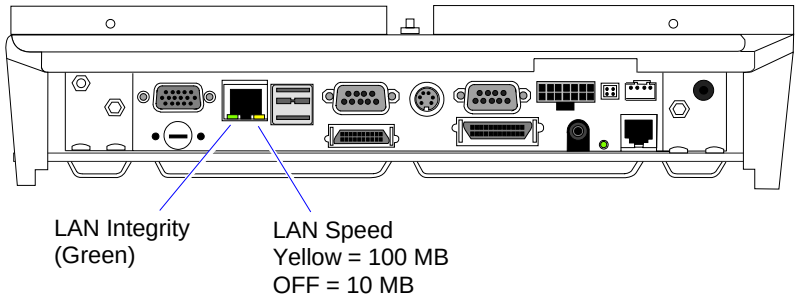
Power OK LED

The Power OK LED is located behind the Cable Cover, between the Customer Display and Cash Drawer connectors.



19901d

LAN Status LEDs



19901c

Power Supply

The terminal uses an AC adapter for its power supply, mounted inside the cabinet. The supply is inaccessible when the terminal is in the normal operation with the cabinet closed. The mounting position to prevent tampering, and sealed to help protect against spills or other environmental hazards.

Note: The power supply automatically senses the proper AC voltage; therefore only normal servicing access is required.

All power required to operate the base unit, PCMCIA option and PCMCIA cards, speaker option, scanner option, and bus-powered USB peripherals is provided by the power supply.

The Processor Board serves as the hub to distribute power to all terminal functions. Cash drawers, VFD customer display, PS/2 keyboard, PCMCIA daughter board and slots, scanner (through RS-232 port), USB, hard disk, and the LCD all receive power through their respective Processor Board connectors.

Motorized Card Reader Power Supply

The Motorized Card Reader uses an AC adapter for its power supply, mounted on the inside of the cabinet.

Full Page Printer Power Supply

The Full Page Printer uses an AC adapter for its power supply, mounted inside the cabinet under the printer.

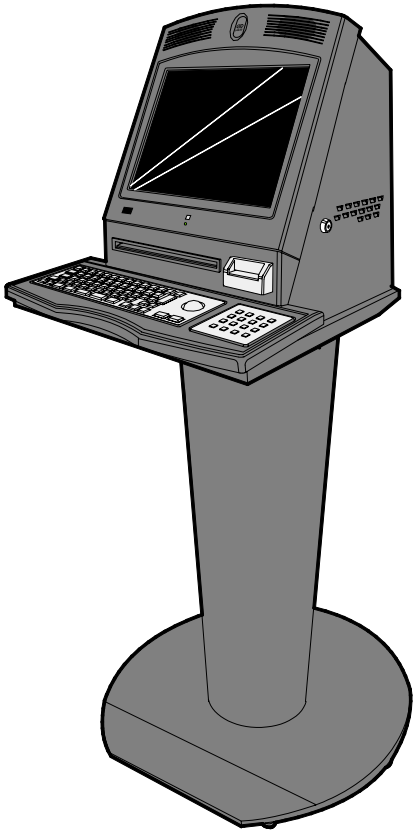
Integrated Speakers

The 7401-4xxx includes two stereo speakers in the top of the Bezel above the LCD Touch Screen. The maximum output of the speakers is approximately 6 watts per channel.

EasyPoint 45 Pedestal

A cone-shaped, basic pedestal for the 7401-4xxx terminal. The pedestal is black and is metal and wood construction. The base of the pedestal has the following features:

- Mounting holes to secure the unit to the floor
- Adjustable feet
- Cable access door
- Space for an NCR 4055 UPS
- Cable routing hole and channel



20047a

Chapter 3: 7401-2xxx/3xxx Hardware Installation

Introduction

The 7401-2xxx and 3xxx terminals are fully assembled at the factory. This chapter explains the mounting options and how to connect optional hardware components to these terminals.

Installation Summary

The terminal should be removed from the shipping packaging and visual checks made to verify the correct hardware configuration. The system is then configured and any communication cables are connected.

Only after inspection should the power cord be attached to the system and then connected to the AC power source. Power-up self-tests will run to verify basic functionality.

ROM-based setup should be used to configure network options. Full configuration depends upon the system server and the management web site.

Installation Restrictions

- Before installing the terminal, read and follow the guidelines in the *NCR EasyPoint 7401* Site Preparation Guide and the NCR Workstation and Peripheral AC Wiring Guide.
- Install the terminal near an electrical outlet that is easily accessible. Use the power cord as a power-disconnect device.
- Do not permit any object to rest on the power cord. Do not locate the terminal where the power cord can be walked on.
- Use a grounding strap or touch a grounded metal object to discharge any static electricity from your body before servicing the terminal.
- If the power cord is replaced, it must be replaced with the same type of cord with the protective shroud.
- Do not route the power cord through openings with sharp edges.

Caution: This unit contains hazardous voltages and should only be serviced by qualified service personnel.

Caution: DO NOT connect or disconnect the transaction printer while the terminal is connected to AC power. This can result in system or printer damage.

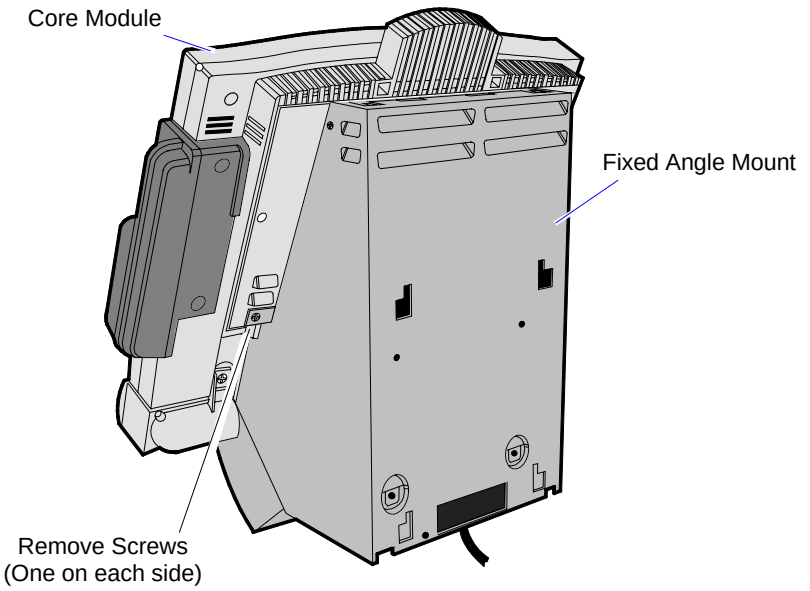
Warning: The 7401 must be mounted securely to prevent a hazard. It must be installed in accordance with local building codes. The post or wall on which the unit is mounted should be able to withstand four times the weight of the unit, which is approximately 20 lbs. (9 kg).

Connecting the Cables

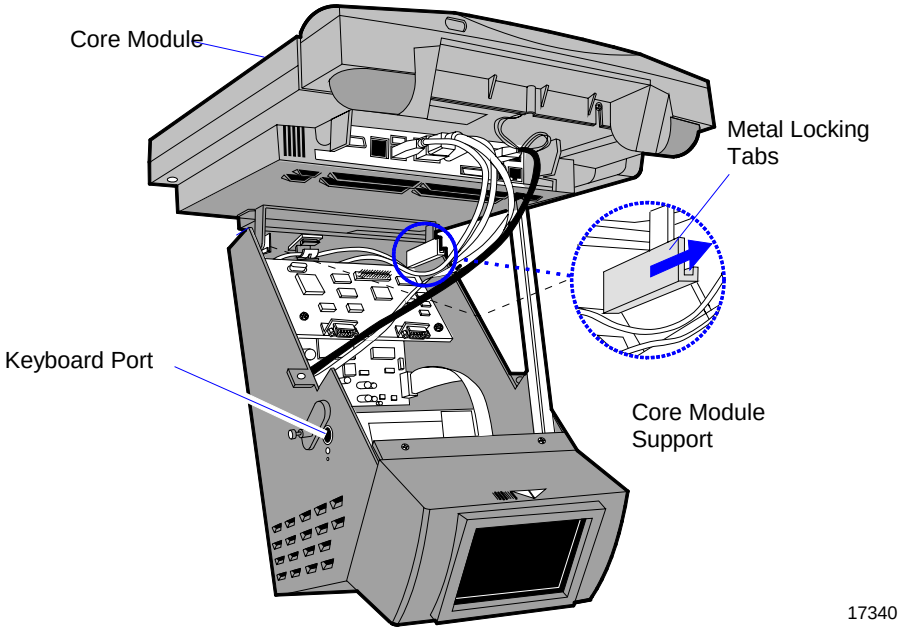
The cable connectors are located behind the Core Module. The procedure for accessing the connectors is different for Fixed-Angle Mounts and Tilt Mounts.

Fixed-Angle Mount (F504)

1. Remove the screws that secure the Core Module to the Fixed-Angle Mount.



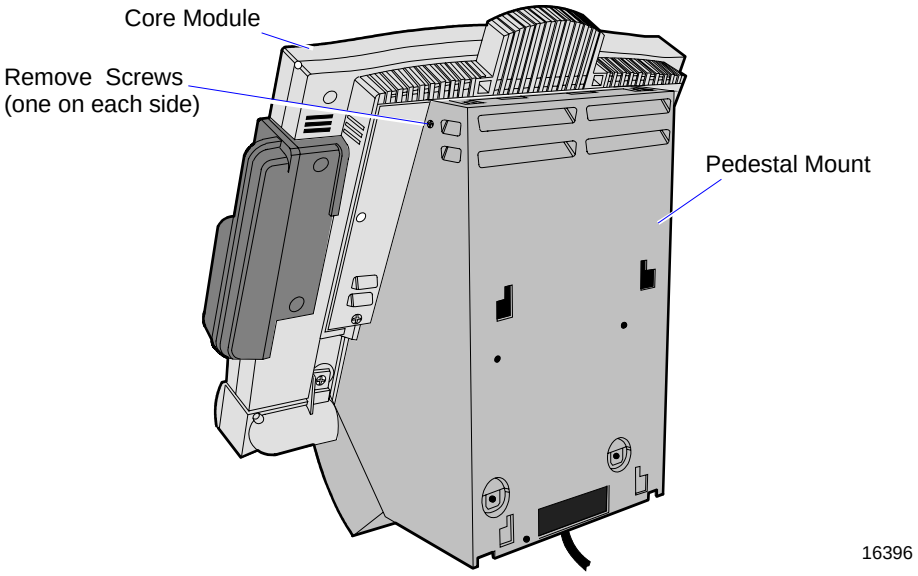
2. Raise the bottom of the Core Module, pull out the Core Module Support and rest the Core Module on the Core Module Support.



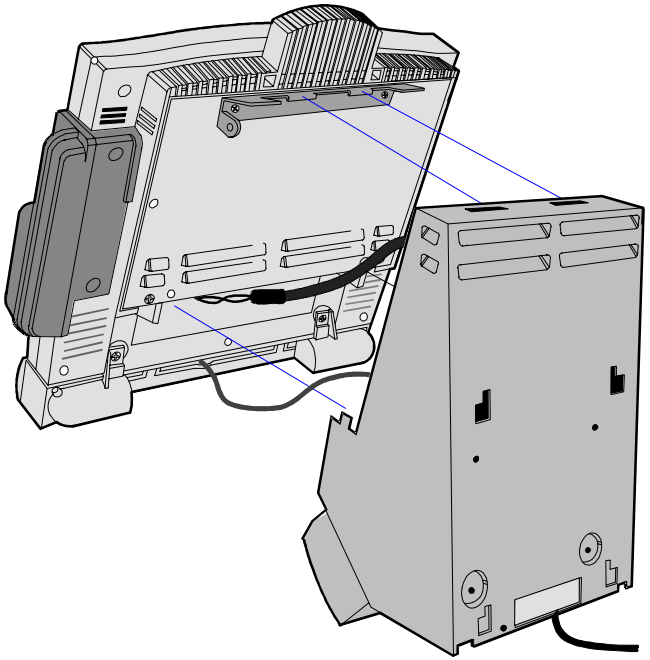
3. Route the cables as described in the following section, *Cable Routing*.

Fixed-Angle Mount (F503)

1. Remove the screw that secures the Core Module to the Fixed-Angle Mount.



2. Remove the Core Module from the Fixed-Angle Mount.



16397

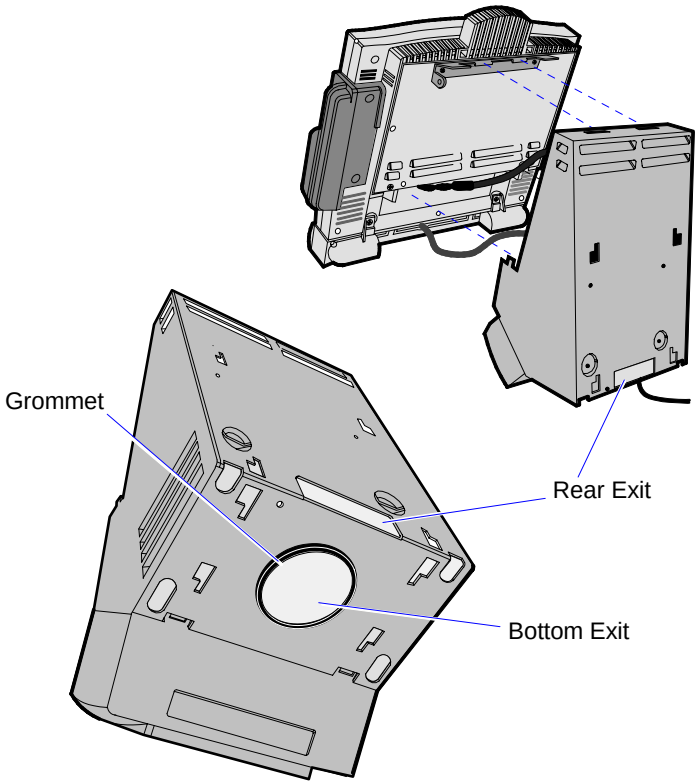
3. Route the cables as described in the following section, *Cable Routing*.

Cable Routing

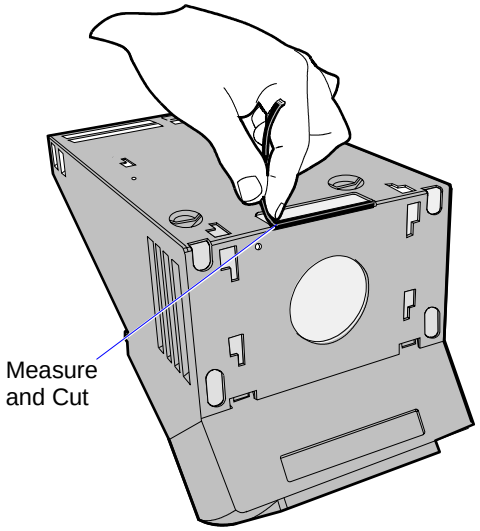
The cables can be routed either out the bottom or rear of the Fixed-Angle Mount. The Power Cord is shipped from the factory routed through the bottom exit hole in the Fixed-Angle Mount. To route the cables out the rear exit, you must move the grommet from the bottom exit to the rear exit hole.

Since these openings have different shapes, you must trim the grommet to length.

1. Remove the grommet from the bottom exit hole.

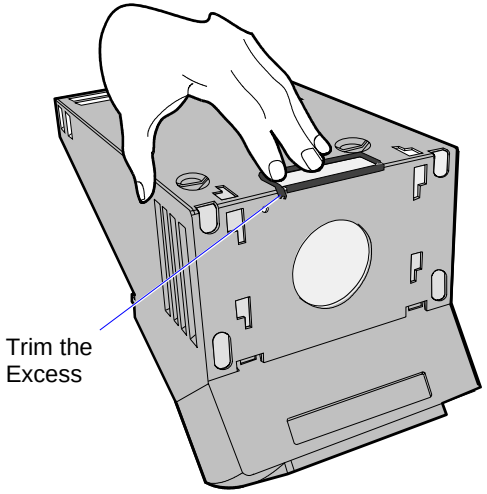


2. Press the grommet along the bottom edge of the rear exit and cut it to length.



16482

3. Install the remainder of the grommet to the other three sides of the opening.

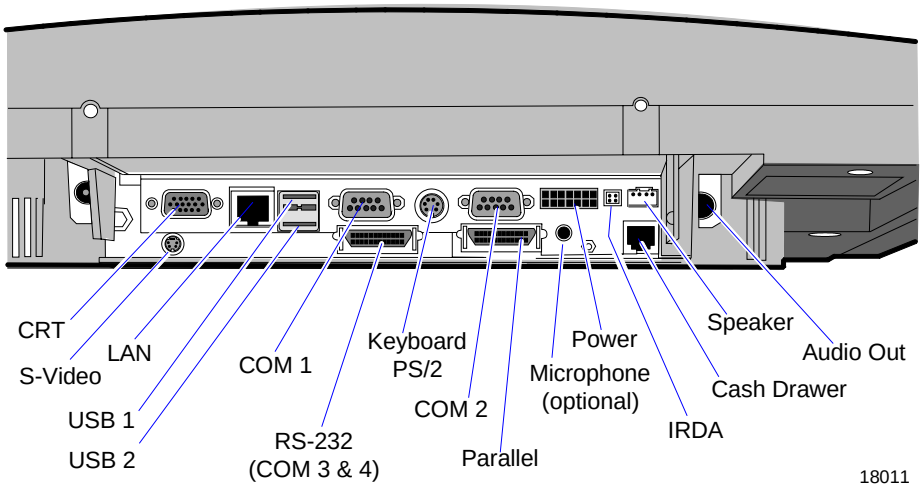


16483

4. Trim the excess length.

Cable Connector Identification

The cable connectors are located on the back of the Core Module.



Note: COM1 and COM3 can be powered ports. They are enabled in the BIOS.

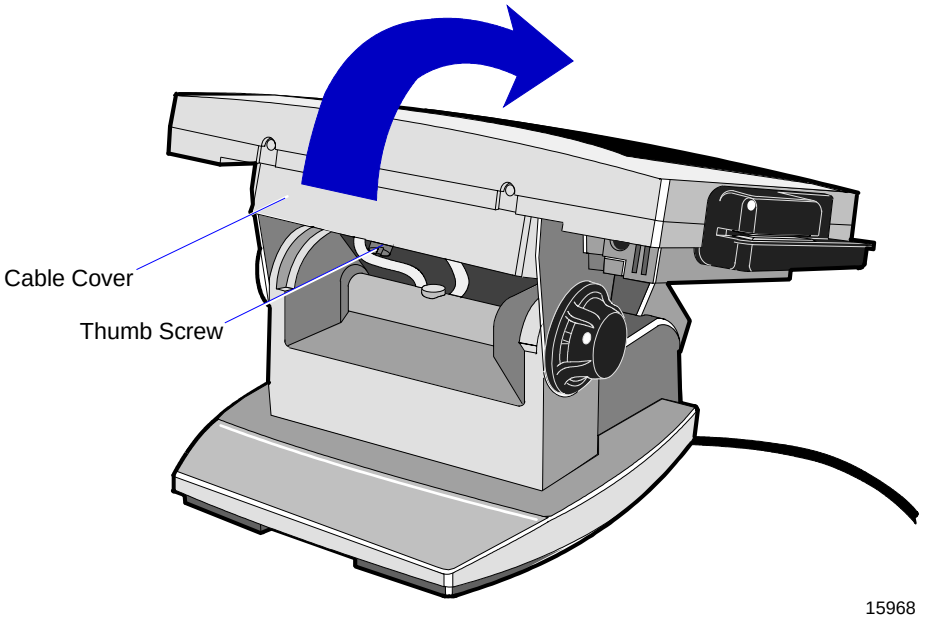
Note: The COM3 & COM4 RS-232 ports require the *Dual RS-232 Port Kit* (7454-F072) feature

After connecting the cables, reassemble the terminal.

Tilt Mount

Tilt Mount cable connectors are located on the underside of the Core Module, under a cable cover.

1. Tilt the display to access the cable connectors.

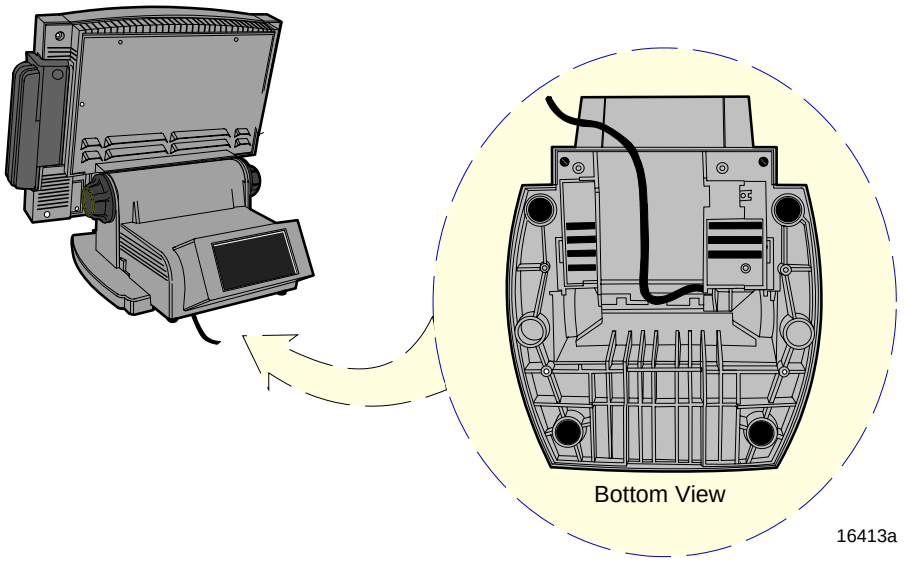


2. Loosen the thumbscrew that secures the Cable Cover and remove the cover.

Cable Routing

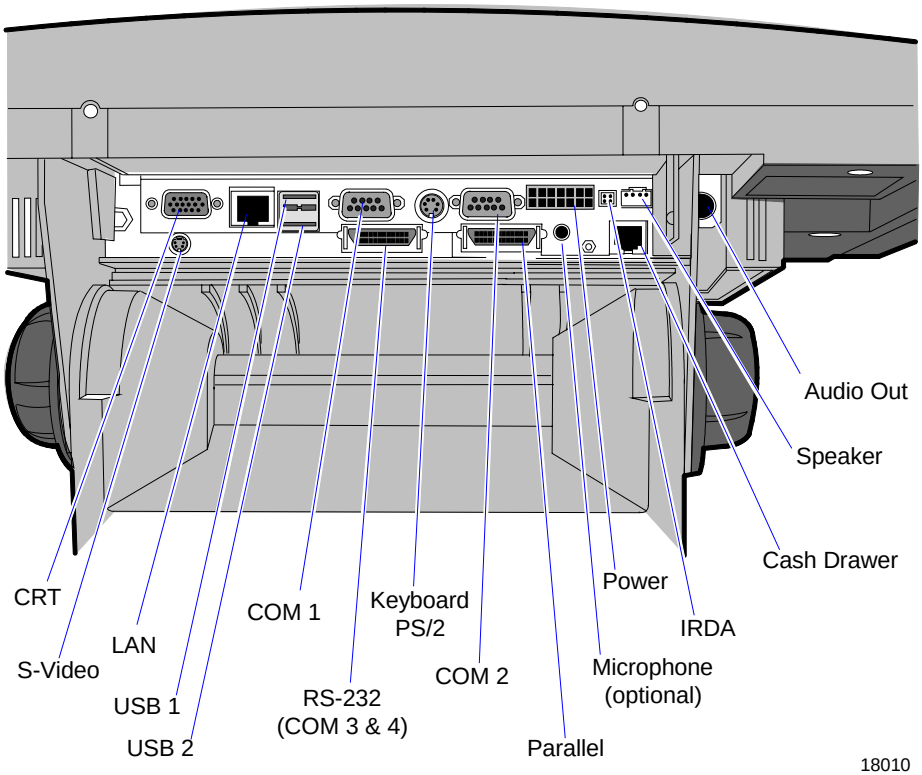
The Tilt Mount has three places to secure cables to the base of the unit by using a cable tie wrap. Remove the power supply cover or customer display from the base of the unit, two thumb screws on bottom rear, and use a tie wrap to secure the Ethernet cable to one of the provided molded cable tie holders on the base. This should provide sufficient strain relief to prevent the cable from becoming tight and damaging the connector on the Processor Board.

The peripheral cables are routed down through the Mount Assembly and out the rear of the unit.



Cable Connector Identification

1. Connect the peripheral and LAN cables. The illustration below can be used to identify the connectors on the terminal. See the sections that follow for specific installation instructions for each of the peripherals.



Note: COM1 and COM3 can be powered ports. They are enabled in the BIOS.

Note: The COM3 & COM4 RS-232 ports require the *Dual RS-232 Port Kit* (7454-F072) feature

2. After installing the peripheral and LAN cables replace the cable cover and re-tighten the thumbscrew.

Installing Peripherals

This section describes how to install transaction printers and other peripherals on the 7401-2xxx and 3xxx terminals.

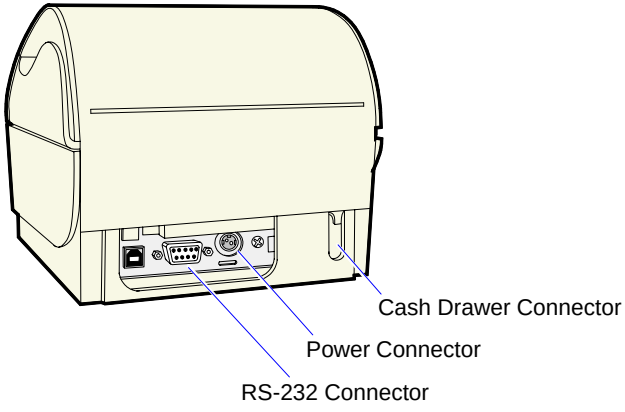
Installing a Transaction Printer

The following printers can connect through a non-powered RS-232 or USB connector. They all require an external power supply. The illustrations show how to connect to the 7194 printer. Connecting to the other three printers is done in the same manner. Refer to the corresponding printer owner's guide for illustrations of the connector locations.

- 7158
- 7167
- 7194
- 7197

RS-232 Installation

1. Connect the Printer Interface Cable to the *RS-232 Connector* on the back or on the bottom of the printer.

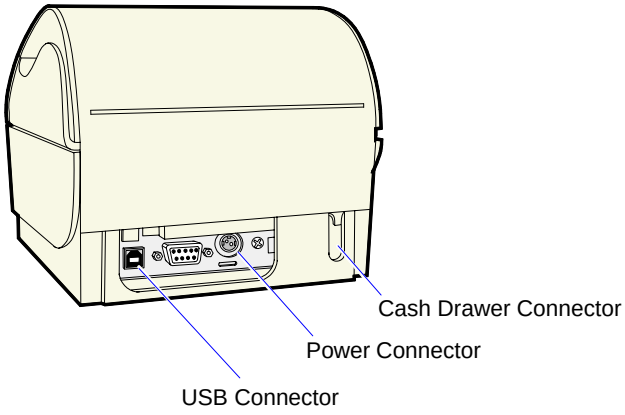


16632a

2. Connect the other end of the printer cable to one of the RS-232 (non-powered) ports on the terminal.
3. Connect the external power supply cable to the Power Connector on the printer.
4. Plug the external power supply AC cable into an AC outlet.

USB Installation

1. Connect the Printer Interface Cable to the *USB Connector* on the back or on the bottom of the printer.

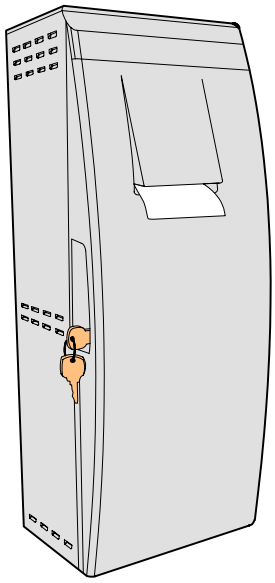


16632b

2. Connect the other end of the printer cable to one of the USB connectors (USB 1 or USB 2) on the terminal.
3. Connect the external power supply cable to the *Power Connector* on the printer.
4. Plug the external power supply AC cable into an AC outlet.

7401-K590 Self-Service Printer

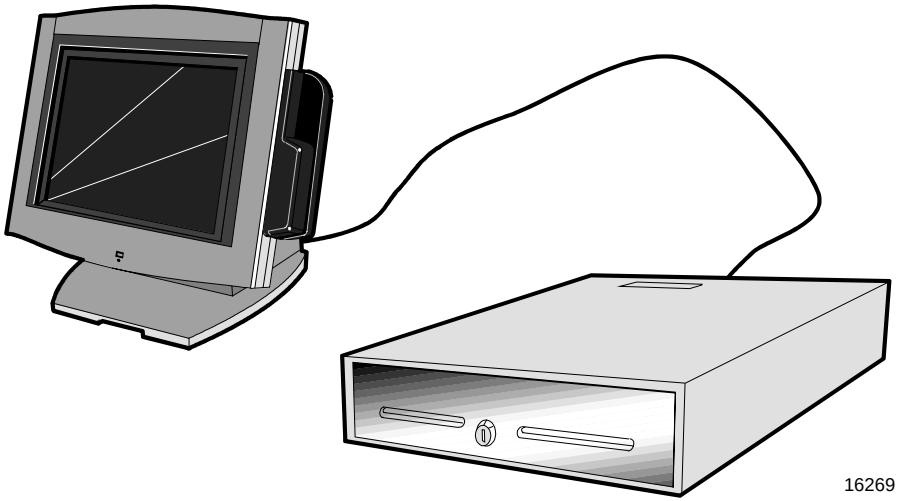
For information about installing the K590 self-service printer, refer to the *NCR 7401-K590 Self-Service Printer Owner's Guide* (B005-0000-1346).



18012

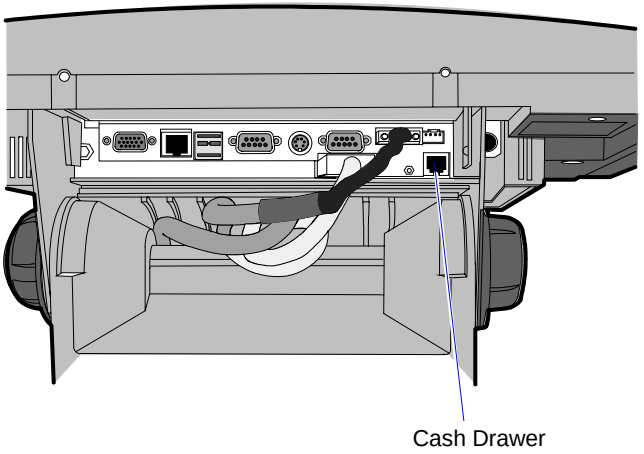
Installing a Cash Drawer

1. Place the cash drawer in the desired location, within cable length of the terminal.



16269

2. Connect the cash drawer cable to the terminal cash drawer connector.



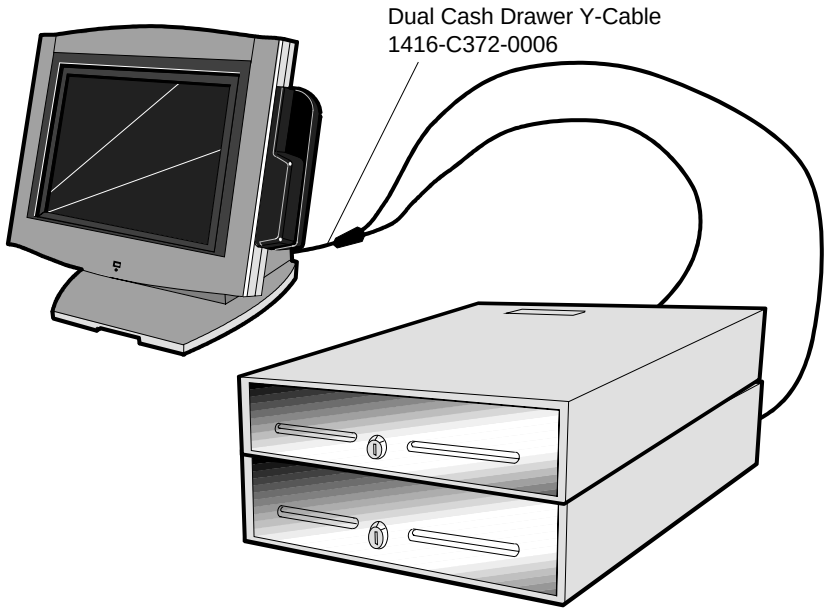
15969c

Note: The Cash Drawer can optionally be connected to the printer.

Installing a Second Cash Drawer

The terminal supports a 2-drawer configuration with a Y-cable (1416-C372-0006).

1. Place the cash drawer in the desired location, within cable's length of the terminal.
2. Connect the Y-cable to the terminal cash drawer connector.



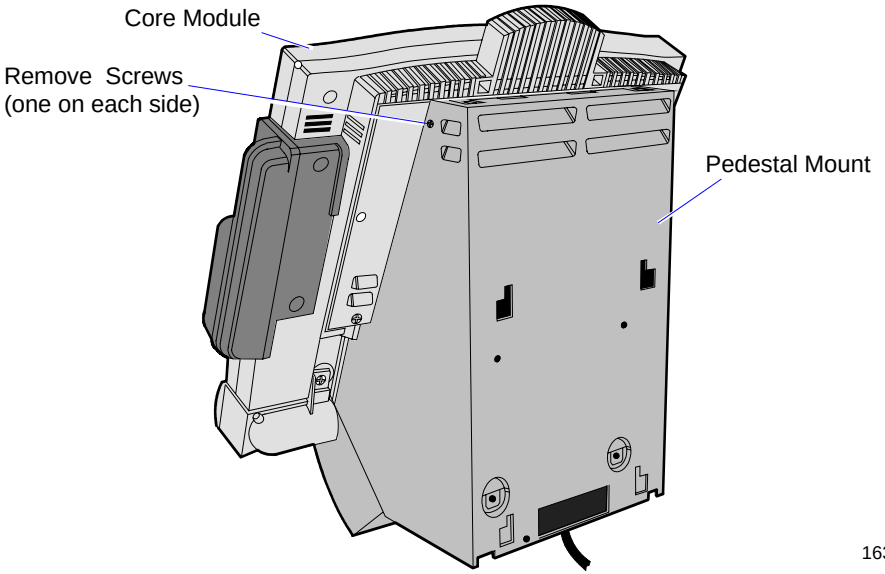
Note: The Y-cable can optionally be connected to the printer.

Installing PC Cards

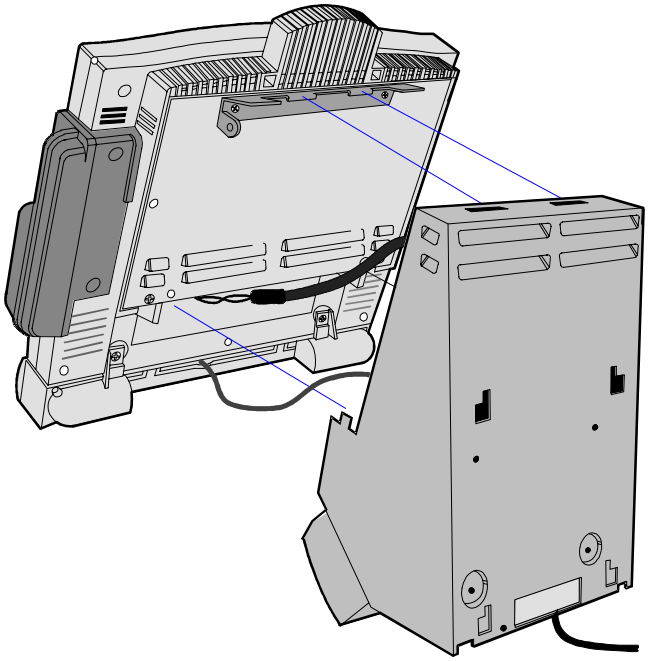
PC cards (wireless, modem, and so forth) can be installed on any terminal with the Dual PCMCIA Port (7401-K060).

Only terminals with a Fixed-Angle Mount require the removal of the Core Module from the mount to install a PC card. If you do not have a Fixed-Angle Mount terminal, skip to Step 3.

1. Remove the screws that secure the Core Module to the Fixed-Angle Mount.

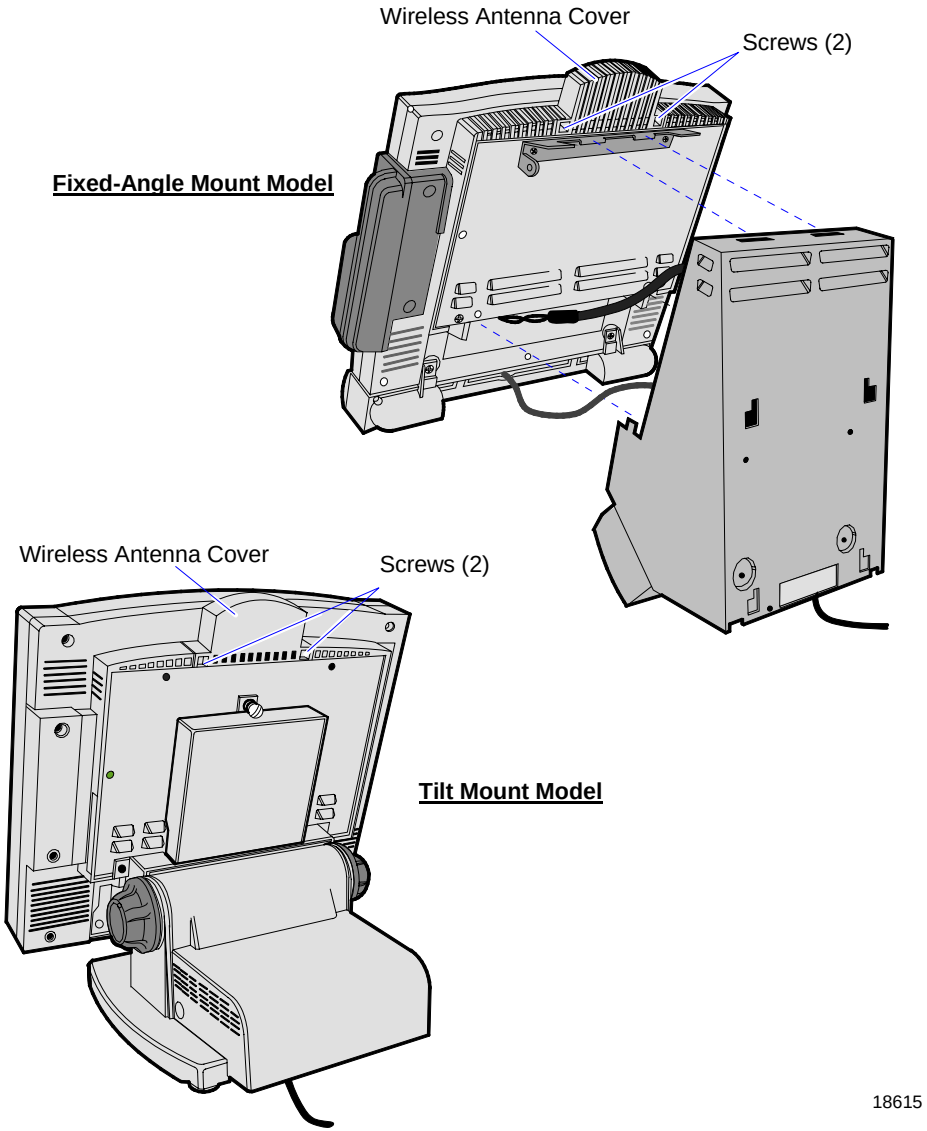


2. Remove the Core Module from the Fixed-Angle Mount.



16397

3. Remove the Wireless Antenna Cover.

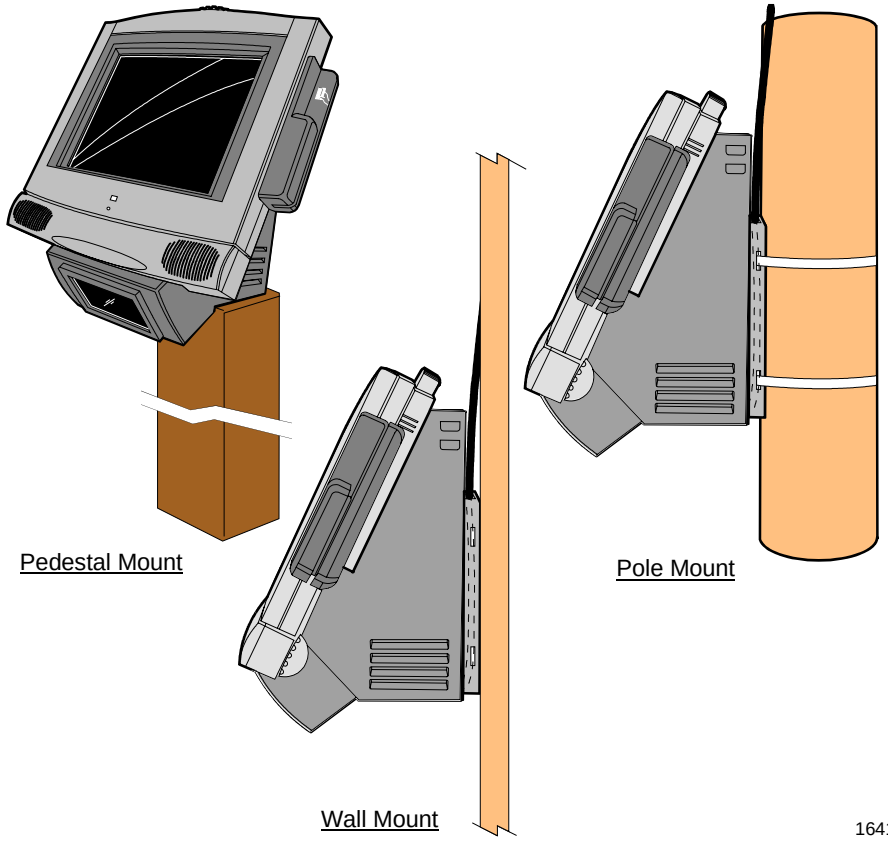


4. Insert the PC card (wireless card, modem, and so forth).

Mounting a Fixed-Angle Mount Terminal

A terminal attached to a Fixed-Angle Mount can be installed on a:

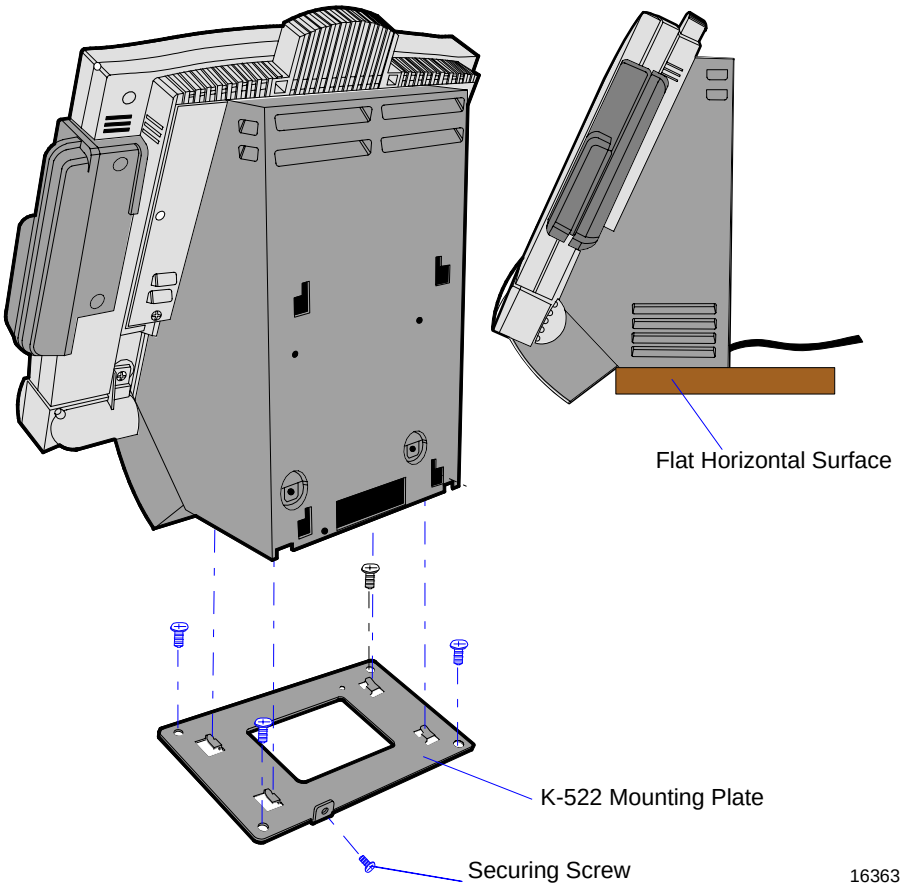
- Pedestal (or on the edge of a flat horizontal surface)
- Wall
- Pole



The sections that follow describe how to perform these installations. For installation instructions of feature kits not described in this section, refer to the *Feature Kits* appendix.

7401-K522 Pedestal Mount

To install the Fixed-Angle Mount on a pedestal or the edge of flat horizontal surface, use the K522 Table Mount Bracket Kit.



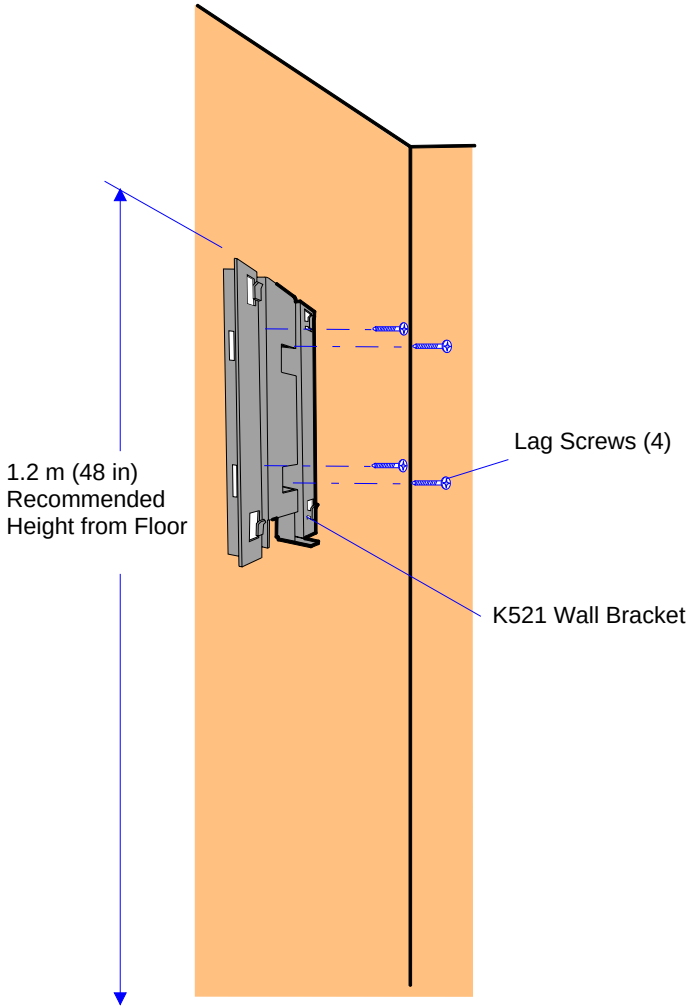
1. Secure the Mounting Plate to the flat horizontal surface of choice. Position the plate to permit the scanner module to hang over the edge of the surface.

2. The cables for the 7401 can be routed through an opening in the back of the Fixed-Angle Mount, or you can remove the plastic knockout in the bottom of the mount to permit routing the cables down through the flat surface. If you are routing cables out the bottom, drill a hole in the flat surface aligned with the rectangular opening in the Mounting Plate.
3. Install the 7401 to the Mounting Plate. The slots on the bottom of the Fixed-Angle Mount mate to locking tabs on the Mounting Plate.
4. Install the Securing Screw.

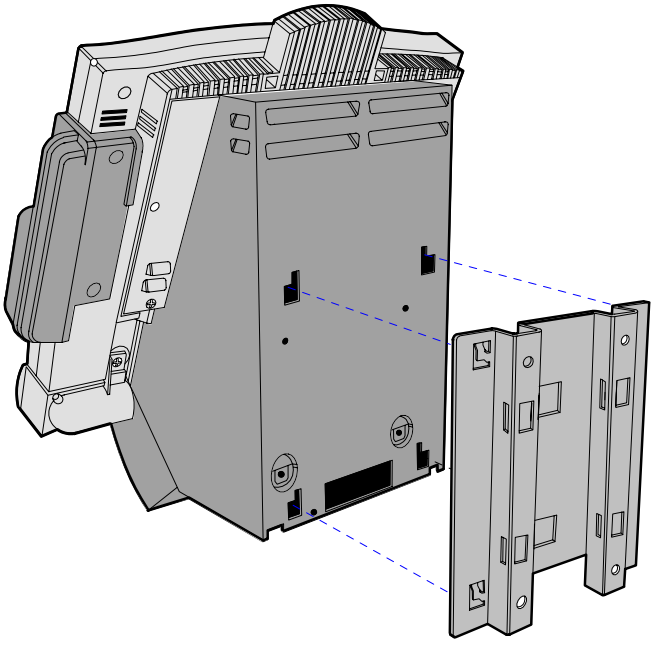
7401-K521 Wall Mount

To install the Fixed-Angle Mount on a wall, use the K521 Wall Mount Bracket Kit.

1. Secure the Wall Bracket to the wall with lag screws into the studs, or with hardware of similar strength. The recommended viewing height for the terminal is 1.2 m (48 in.) from the floor.



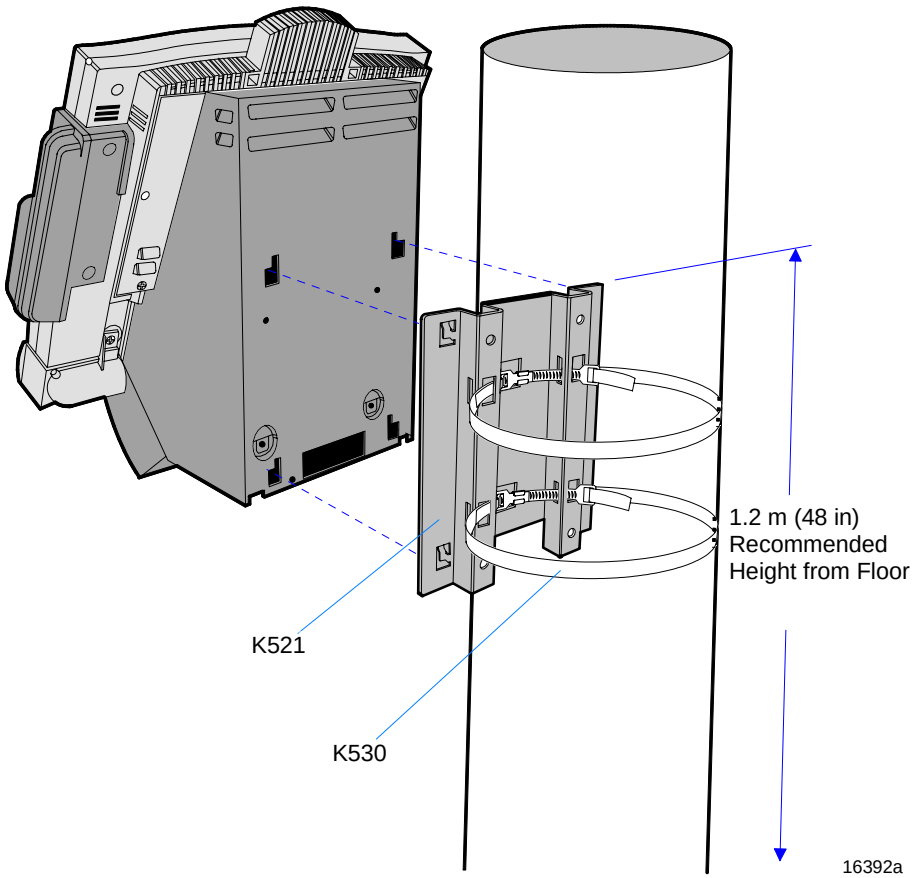
2. Install the slots on back of the Fixed-Angle Mount onto the locking tabs of the Wall Bracket.



16416

7401-K521 Wall Mount with 7401-K530 Pole Brackets

To install the Fixed-Angle Mount on a pole, use the K520 Post Mount Bracket Kit (same as K521 but includes strap kit).

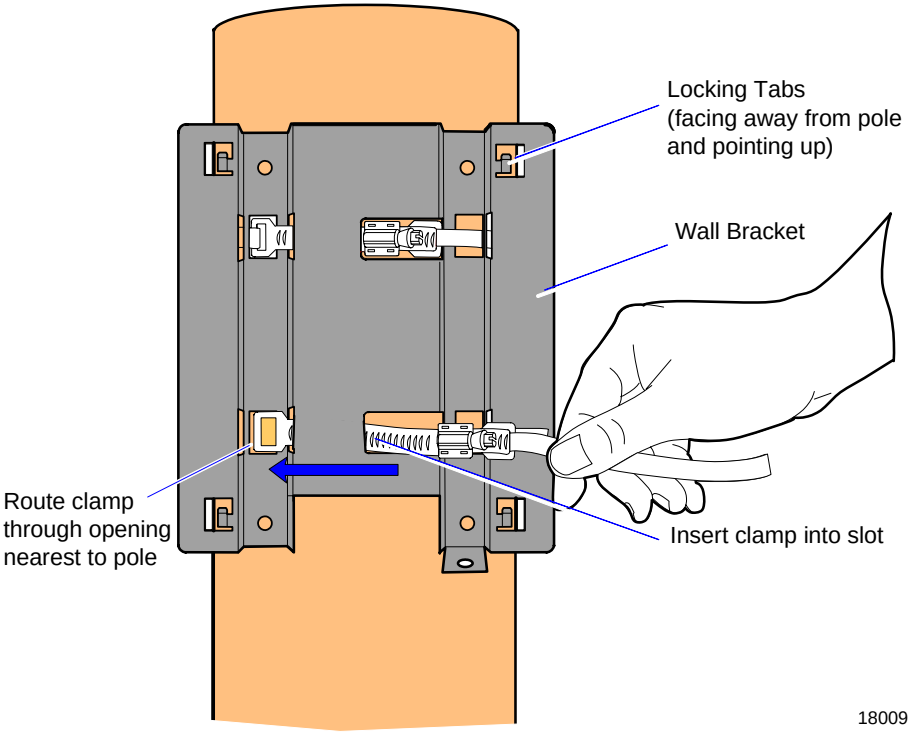


1. Cut two metal straps to length (pole circumference plus 2 inches).

2. Loop one end of the metal strap through the slot on the clamp.

16417

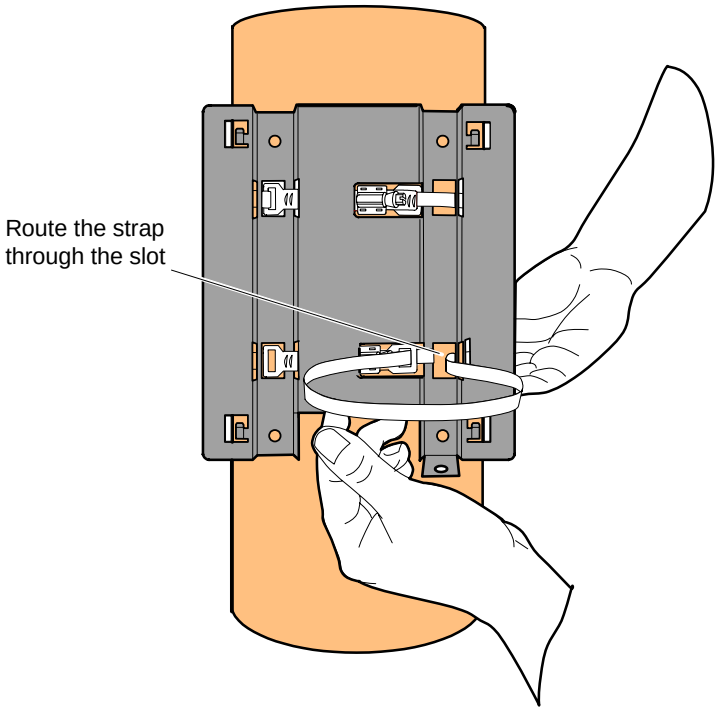
3. Insert the end of the clamp into the slot on the Wall Bracket as shown below.



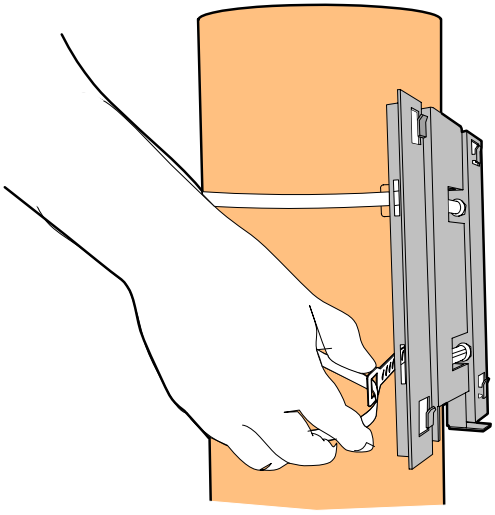
18009

Note: There are two openings that the clamp can be routed through. Use the larger opening for round poles (nearest the pole). Use the narrow slot for square/rectangular poles.

4. Insert the metal strap through the opening on the opposite side of the Wall Bracket.

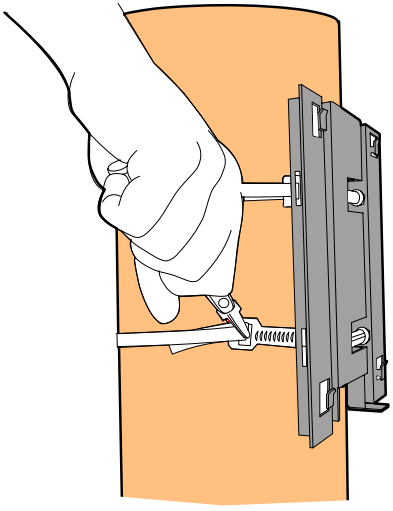


5. Wrap the metal strap around the pole and loop it through the other end of the clamp.



16406

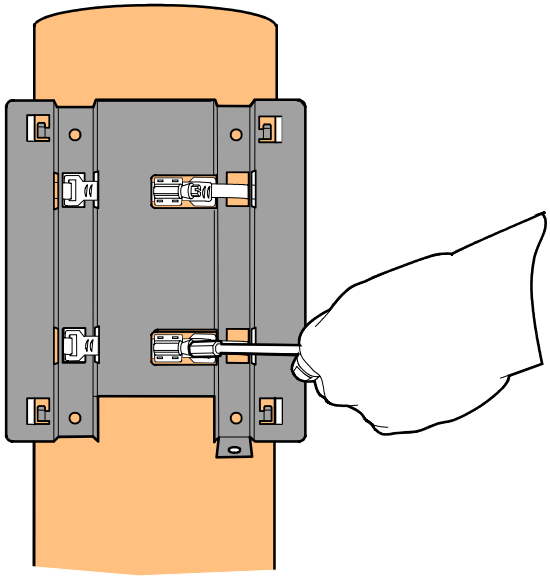
6. Snug the clamp and then crimp the metal strap with a pair of pliers.



16409

7. Using a 5/16-nut driver, tighten the clamp.

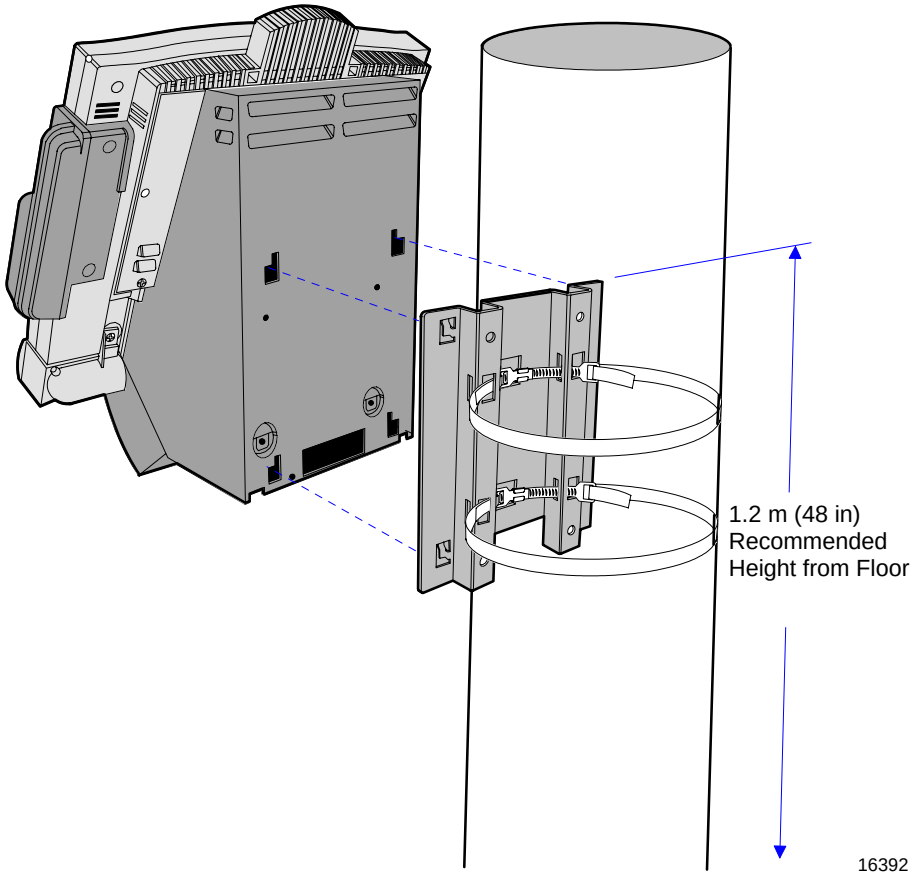
   Caution: Do not over-tighten the clamps.



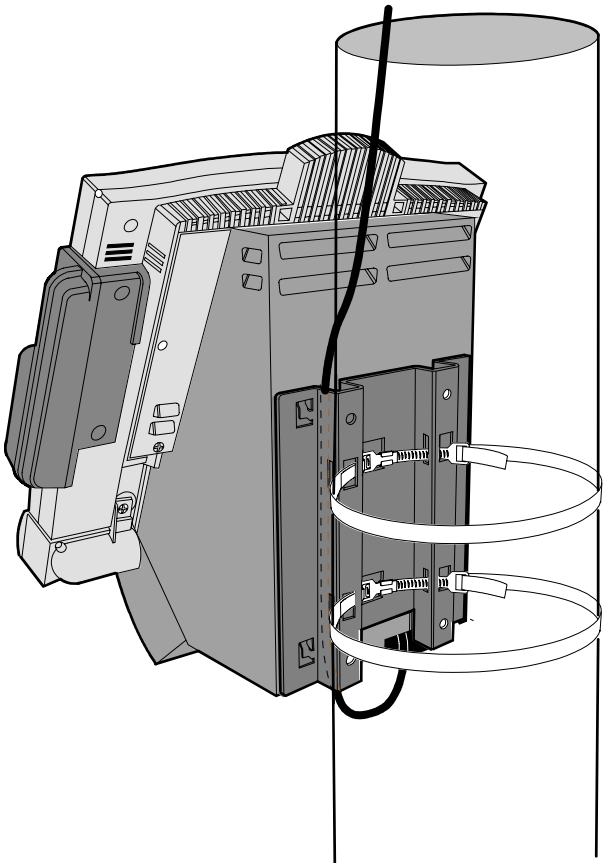
16407

8. Repeat the previous steps for the second clamp.

9. Install the slots on back of the Fixed-Angle Mount onto the locking tabs of the Wall Bracket.



10. For a pole mount installation, route the cables through the Wall Bracket as shown below.



16408

Installing a K501 Tilt Mount Terminal

A Tilt-Mount terminal can be installed on a flat horizontal surface or a flat vertical surface.

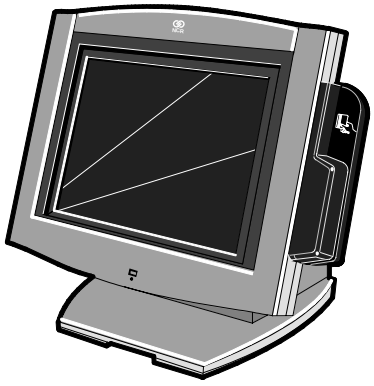
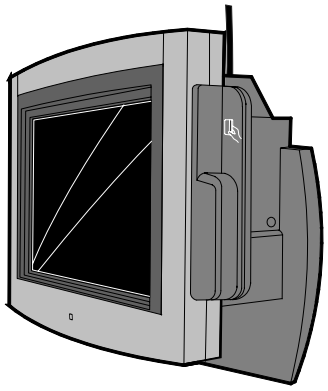


Table-Top Mount



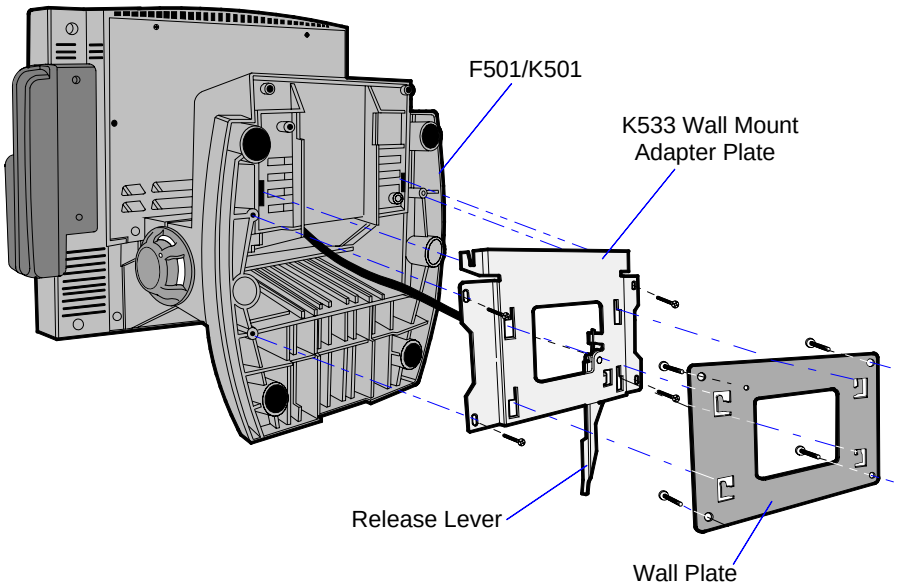
Wall Mount

16429

7401-K533 Wall Mount

To install the Tilt Mount on a flat vertical surface, use the K533 Wall Mount Bracket Kit.

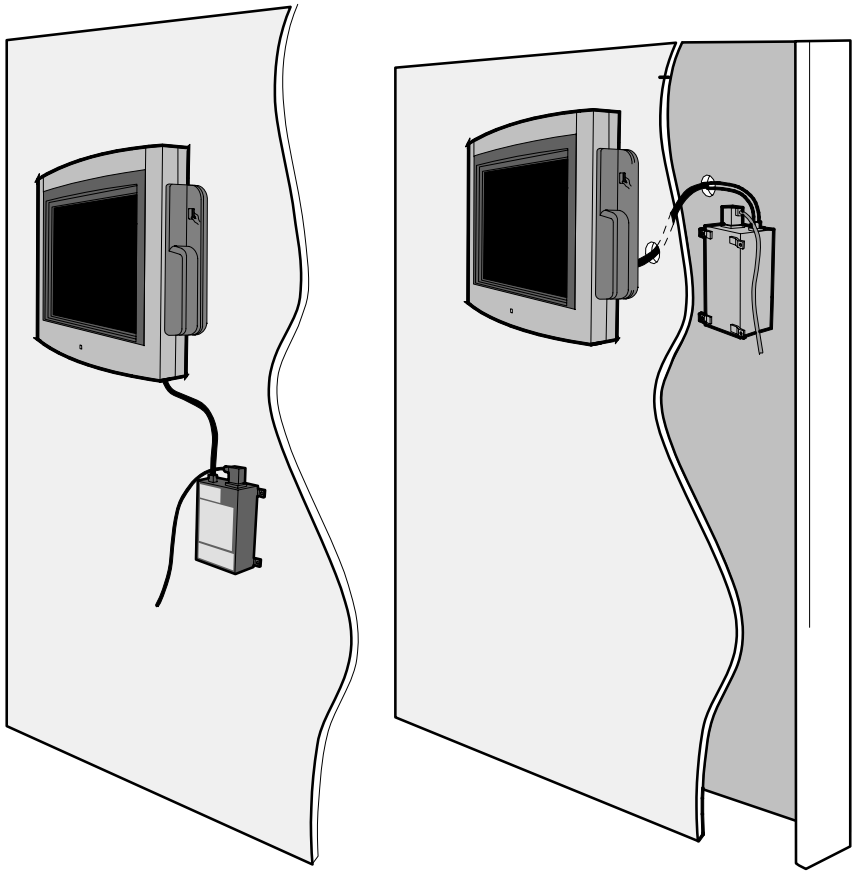
1. Secure the Wall Plate to the wall with lag screws (4) into the studs or with hardware of similar strength. The recommended viewing height for the terminal is 1.2 m (48 in.) from the floor.



2. Install the Wall Mount Adapter Plate to the bottom of the terminal with screws (4).
3. Install the terminal to the Wall Plate. The bottom of the Wall Mount Adapter Plate has slots that mate to locking tabs on the Wall Plate.
4. Latch the Release Lever.

Wall Mounting a 7401-K502 Core Module

To flush mount the Core Module on a flat vertical surface, use the F502 Flush Mount Bracket Kit.



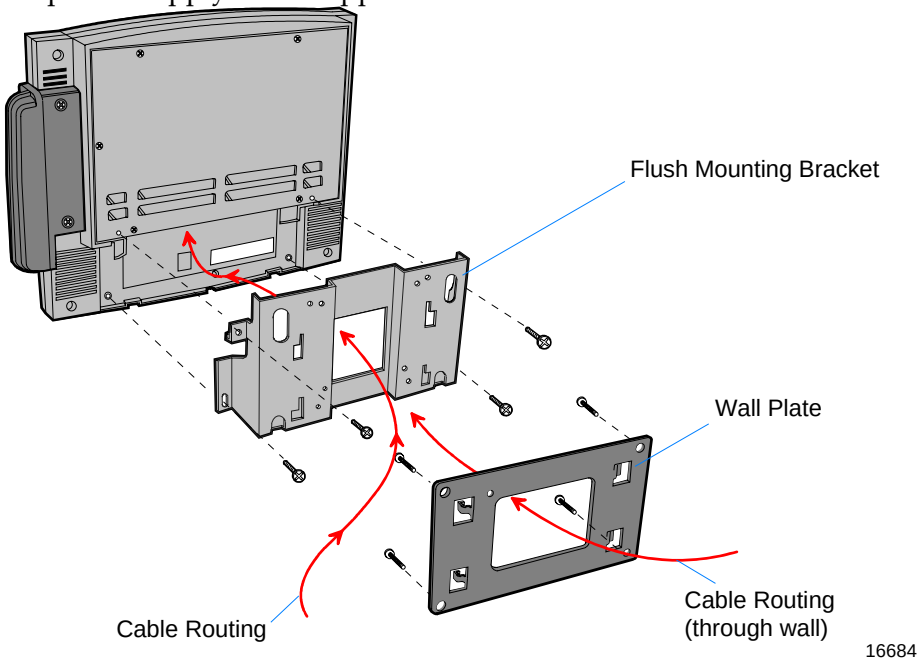
Flush Mount w/Power Supply Mounted on the Outside Wall

Flush Mount w/Power Supply Mounted on the Inside Wall

16683

1. Secure the Wall Plate to the wall with lag screws (4) into the studs or with hardware of similar strength. The recommended viewing height for the terminal is 1.2 m (48 in.) from the floor to the center of the screen.

   Note: Drill a hole in the wall for the cables if you are mounting the power supply on the opposite side of the wall.

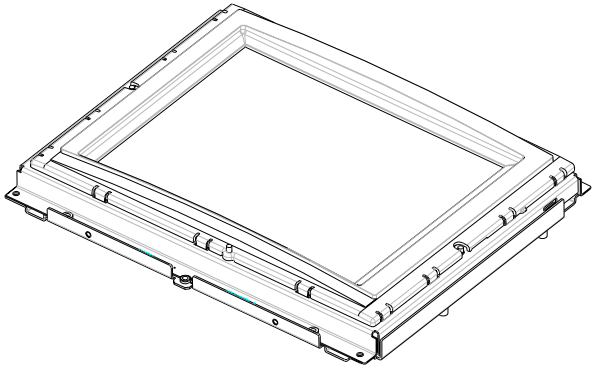


2. Mount the Power Supply to the wall with screws (4).
3. Route all cables through the brackets and connect them to the terminal.
4. Install the Flush Mounting Bracket to the back of the terminal with screws (4).
5. Install the terminal to the Wall Plate. The bottom of the Flush Mounting Bracket has slots that mate to locking tabs on the Wall Plate. Secure the unit with the screw.

7401-9212 LCD No-Cabinet (12.1-inch)

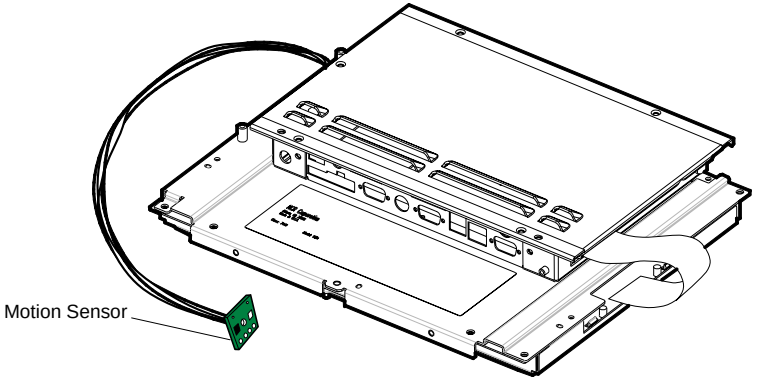
The 12.1-inch LCD No-Cabinet model is purchased by customers who design their own enclosures to meet their specific needs. This section provides information that must be considered when designing enclosures.

Front View



18577

Back View



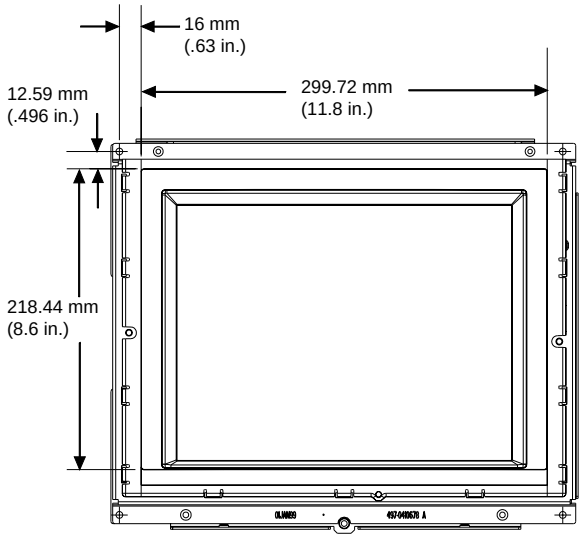
18743

Installation Guidelines

- To prevent moisture from entering system, the front of the display must be in close contact with the opening in the enclosure.
- Within every custom enclosure, the Electronics Box Back Cover MUST remain installed because it helps dissipate the heat generated by the CPU.
- Adequate ventilation must be provided in every custom enclosure. The maximum allowable ambient temperature within any enclosure is 45° C (113° F).
- To prevent accidental shorts, the power supply and any other peripherals within the enclosure must be mounted securely and within reach of the display's connectors.
- This model comes with a motion sensor that is at the end of a 381 mm (15 in.) cable. When using the motion sensor, it must be mounted between 25 and 76 mm (1 to 3 in.) below the bottom of the display and centered along the width of the display. (F753 [AT&T] includes a front enclosure in which the motion sensor is already mounted.)
- Compliance of this device with regulatory requirements must be verified in the end-use application.
- This device is a component which requires a suitable enclosure in its end-use application. The end-use product in which this component is used should be certified in accordance with UL 1950, EN60950, IEC950 or other applicable safety standard.

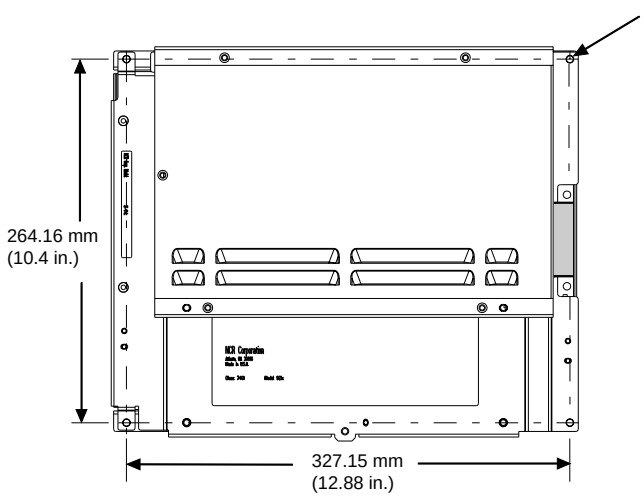
NCR displays are not designed for horizontal or inverted use. NCR displays must be mounted no more than 40° forward or backward from horizontal. Failure to follow this guideline could result in overheating.

Mounting Specification Illustrations



Front surface of display bezel must protrude through enclosure to provide secure and watertight fit.

NCR enclosure fronts typically use a dimension of 302.26 mm (11.9 in.) +/-.254 mm (.01 in.) by 221.23 mm (8.71 in.) +/-.254 mm (.01 in.) with radiuses in the corners of 2.54 mm (.1in.).



18576

7401-9512 LCD No-Cabinet (15-inch)

The 15-inch LCD No-Cabinet model is purchased by customers who design their own enclosures to meet their specific needs. This section provides information that must be considered when designing enclosures.

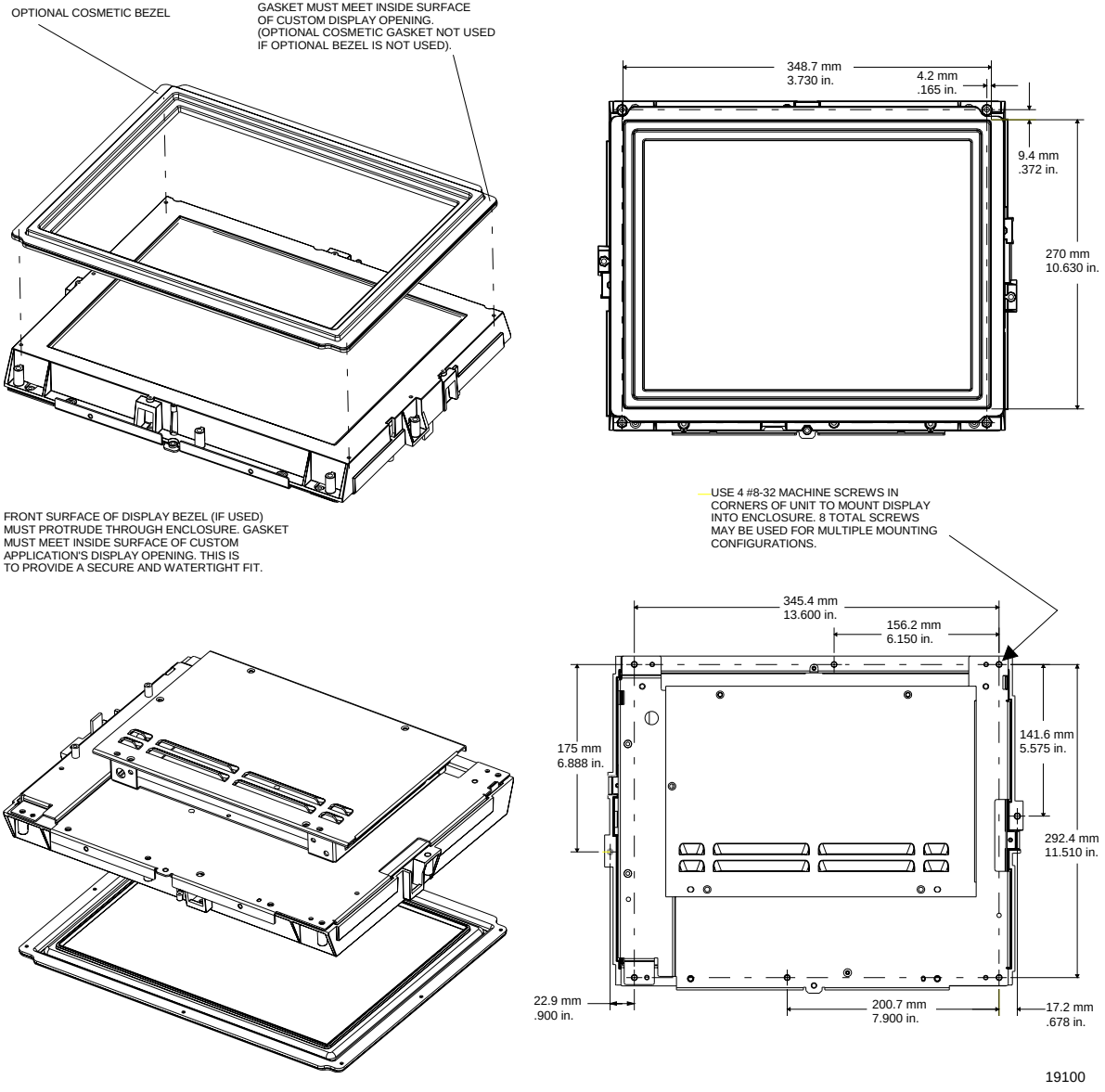
Installation Guidelines

- To prevent moisture from entering system, the front of the display must be in close contact with the opening in the enclosure.
- Within every custom enclosure, the Electronics Box Back Cover MUST remain installed because it helps dissipate the heat generated by the CPU.
- Adequate ventilation must be provided in every custom enclosure. The maximum allowable ambient temperature within any enclosure is 45° C (113° F).
- To prevent accidental shorts, the power supply and any other peripherals within the enclosure must be mounted securely and within reach of the display's connectors.
- This model comes with a motion sensor that is at the end of a 381 mm (15 in.) cable. When using the motion sensor, it must be mounted between 25 and 76 mm (1 to 3 in.) below the bottom of the display and centered along the width of the display.
- Compliance of this device with regulatory requirements must be verified in the end-use application.
- This device is a component which requires a suitable enclosure in its end-use application. The end-use product in which this component is used should be certified in accordance with UL 1950, EN60950, IEC950 or other applicable safety standard.

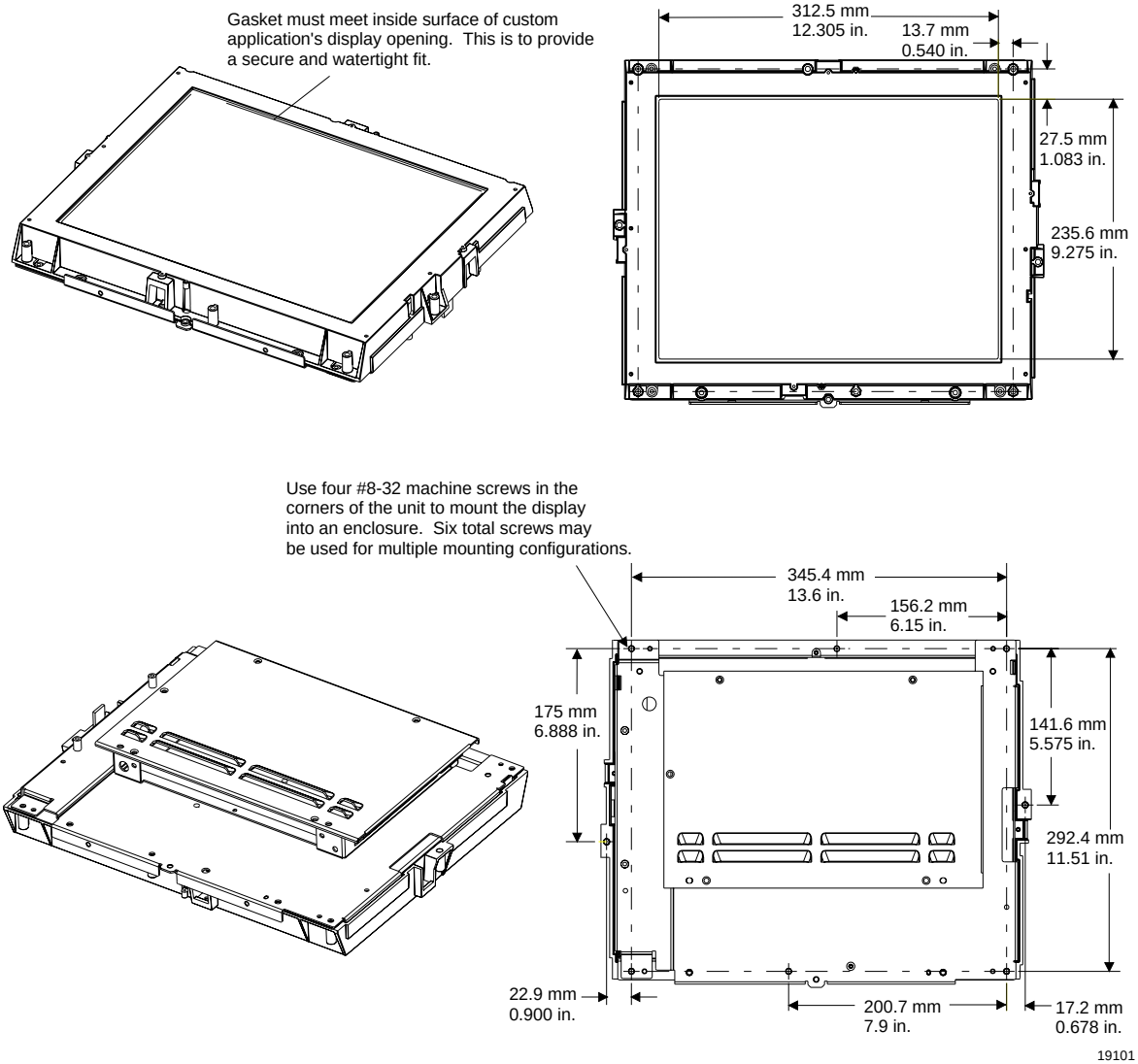
NCR displays are not designed for horizontal or inverted use. NCR displays must be mounted no more than 40° forward or backward from horizontal. Failure to follow this guideline could result in overheating.

Mounting Specification Illustrations

The following illustration shows the minimum allowable dimensions for the display opening when the optional cosmetic bezel is used.


OPTIONAL COSMETIC BEZEL
GASKET MUST MEET INSIDE SURFACE OF CUSTOM DISPLAY OPENING. (OPTIONAL COSMETIC GASKET NOT USED IF OPTIONAL BEZEL IS NOT USED).
348.7 mm
3.730 in.
4.2 mm
.165 in.
9.4 mm
.372 in.
270 mm
10.630 in.
FRONT SURFACE OF DISPLAY BEZEL (IF USED) MUST PROTRUDE THROUGH ENCLOSURE. GASKET MUST MEET INSIDE SURFACE OF CUSTOM APPLICATION'S DISPLAY OPENING. THIS IS TO PROVIDE A SECURE AND WATERTIGHT FIT.
USE 4 #8-32 MACHINE SCREWS IN CORNERS OF UNIT TO MOUNT DISPLAY INTO ENCLOSURE. 8 TOTAL SCREWS MAY BE USED FOR MULTIPLE MOUNTING CONFIGURATIONS.
345.4 mm
13.600 in.
156.2 mm
6.150 in.
175 mm
6.888 in.
141.6 mm
5.575 in.
292.4 mm
11.510 in.
22.9 mm
.900 in.
200.7 mm
7.900 in.
17.2 mm
.678 in.
19100

The following illustration shows the maximum allowable dimensions for the display opening when the optional cosmetic bezel is not used.



4055 Uninterruptible Power System (UPS)

The NCR 4055 UPS is available in two models for the 7401:

Item	Description	Volt/Hz
4055-1300-7194	300 VA/180 Watt Kiosk UPS	120 Volt/60 Hz
4055-1500-7194	500 VA/300 Watt Kiosk UPS	120 Volt/60 Hz

19412

Power Mon II® Software (G099-4551-0100) is recommended for use with the 4055 UPS and the 7401.

Note: On Windows 2000, the Power Mon software may appear to not fully shut the system down. In such cases you may still see a dim display. This does not cause the loss of any data.

Installing the UPS

Refer to the User's Manual delivered with the NCR 4055 UPS before installing the UPS for use with the 7401.

To install the UPS with the 7401 connect the power cable and the LAN cable from the 7401 to the UPS. Then connect the in-house LAN cable to the UPS, and the power cable on the UPS to the AC power outlet.

Note: If you are installing the K580/K590 Self Service Printer or the Printer Spacer in a Pedestal Mount, the UPS must be installed first. See 7401-K037 and 7401-K052 Feature Kits for more information.

Installing the Power Mon II® Software

The Power Mon II® software is provided on CD-ROM and may be installed over a network or using an integrated or parallel CD-ROM drive. All operating system versions of the Power Mon software and installation documentation are contained on the CD.

The Power Mon installation should auto start. If it doesn't, browse the CD for the operating system you are using and run Setup.exe for that operating system. Follow the prompts to install the software.

Note: When you are prompted for Configuration Code, enter **7** to identify the interface cable type.

Configuring the Power Mon II® Software

Once Power Mon is installed, configure the software by clicking on the Power Mon icon. Select "Configure UPS" to configure the UPS parameters such as voice messages and battery run time.

Note: Battery run time for the 4055 UPS running with a 7401 and a K580/K590 Self Service Printer at a load of 150 VA is approximately:

Item	Approximate Battery Run Time
300 VA (180 W)	13 minutes*
500 VA (300 W)	23 minutes*

* Times are approximate and may vary due to modified configurations, environmental conditions, ambient temperature, battery age, and other factors.

Reference *NCR EasyPoint 7401Site Preparation (B005-0000-1255)* for additional power requirements for the 7401.

Finalizing the Installation

After the hardware installation has been completed, the terminal can be powered up to finalize the installation. The operating system, along with platform modifications, is pre-installed. The following sections list the steps involved to complete the system installation for each of the Gold Disk operating systems.

Completing the OS Installation (Win2000)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. After the terminal reboots, it will perform a disk check and then continue with the Windows 2000 installation.
2. Enter the *User Name* and *Organization*.
3. Enter the *Computer Name* for the client.
4. Enter the *Administrator's Account Password* (optional)
5. When prompted, press *Finish* to reboot the client.
6. Login when prompted.
7. Run the MicroTouch screen calibration from the Desktop icon.

Completing the OS Installation (WinXPe)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. Click the Admin button to login as Administrator.

2. Read the EULA (End-User License Agreement) information in the DOS window, then type **EXIT** and press **Enter** to close the DOS window.
3. Start the Network Setup Wizard.
4. Select options to identify the network information for the terminal environment.
5. Enter the *Computer Description*.
6. Enter the *Computer Name*.
7. Enter the *Workgroup Name*.
8. When prompted, press *Finish* to reboot the terminal.
9. Log in when prompted.
10. Open the Control Panel or use the TouchWare Icon on the desktop and run the MicroTouch screen calibration.

Completing the OS Installation (WinNT)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. After the terminal reboots, press *Next* at the Windows Setup screen.
2. Accept the Microsoft license agreement.
3. Enter the *User Name* and *Organization*.
4. Enter the *Computer Name* for the client.
5. Enter the *Administrator's Account Password* (optional)
6. When prompted, press *Finish* to reboot the client.
7. Log in when prompted.
8. Open the Control Panel and run the MicroTouch screen calibration.

Completing the OS Installation (Win98) - (Discontinued)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. When the terminal boots it enters the Windows setup routine.

   Note: When installing Win98 on terminals with Processor Boards (7401-21xx/31xx) there are few differences in the procedure as follows:

   a) The terminal starts the *Add New Hardware Wizard*.

   b) For each device found, permit Windows to search for new drivers (take defaults).

   c) After each driver is installed you are asked to reboot. Answer **No**.

2. At the **User Information** screen, enter the *User* information. This can be done using a keyboard or you can use the touch screen keyboard. After entering the information, press **Enter** or touch **OK**.

3. Go into the Control Panel and set the terminal Date and Time.

4. In the Control Panel, run the MicroTouch screen calibration.

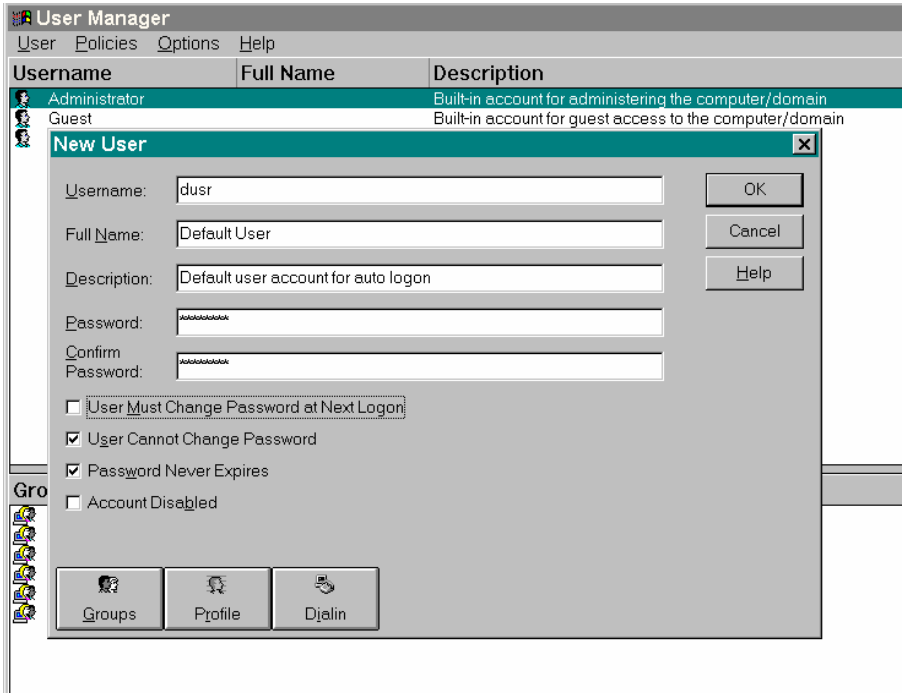
Setting Auto-Logon (WinNT Terminal)

Since the client does not have a keyboard it is desirous to have it logon automatically.

1. Create a default user account that you want to use to logon to the client(s).

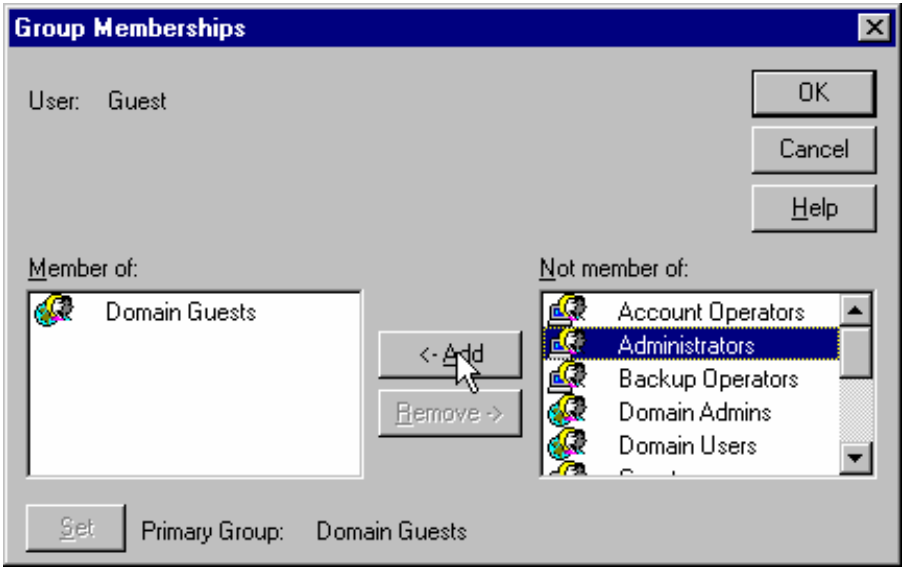
   a) Open the User Manager. Select the Windows **Start** button, select **Programs**, **Administrative Tools (Common)**, and then Select **User Manager.**

   b) Select the **User** menu and then select **New User**. Give the account a password (mandatory). As an extra precaution set the password never expires and that the user can not change it.



   c) Select **Groups** to modify the new user's group memberships.

d) Add the new user to the **Administrators** group. **You need to do this in order to be able to later turn off the auto-logon function.**

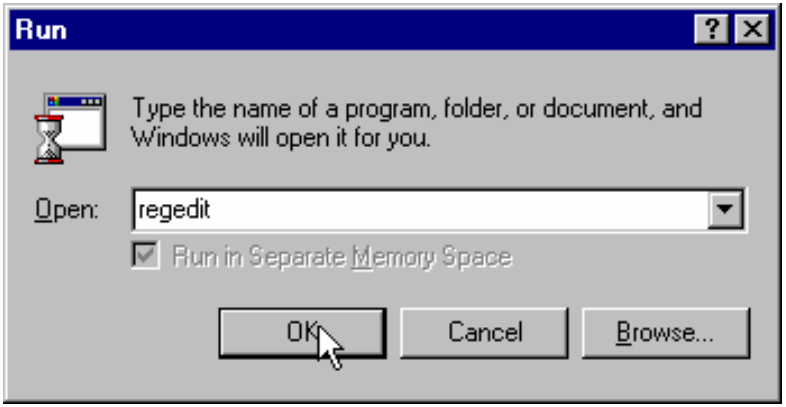


e) Select **OK** to close the Group Membership box.

f) Select **OK** to create the account.

2. Modify the Registry. Select the Windows **Start** button and select **Run**.

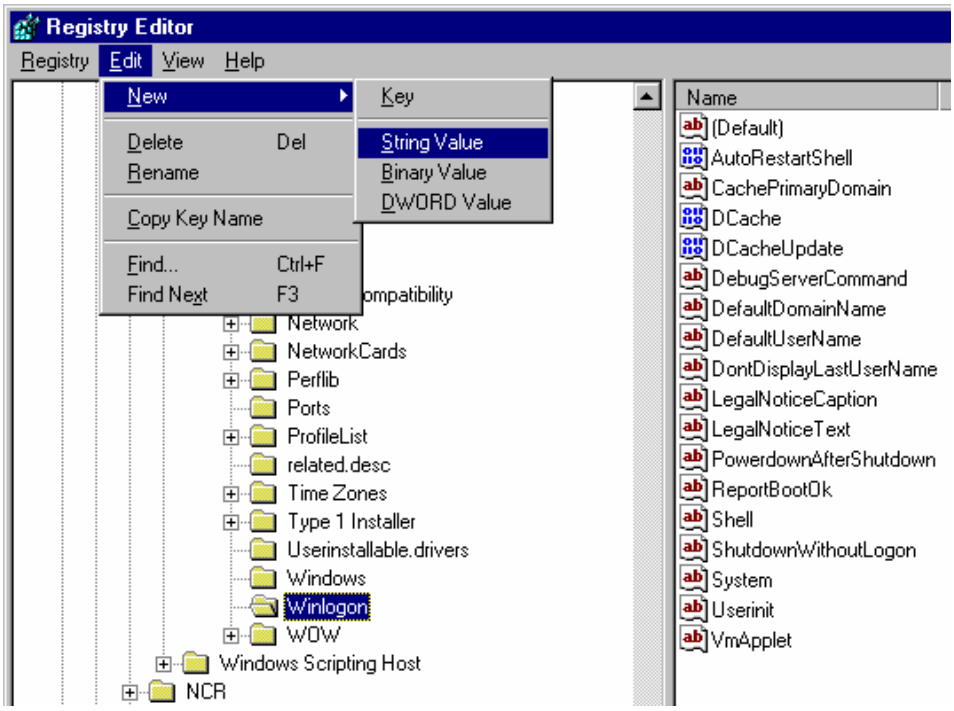
3. Enter `regedit` and then select **OK**.



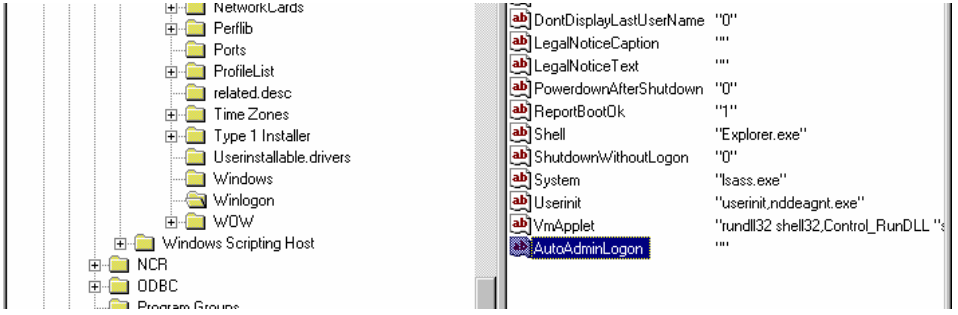
4. Open the following registry subkey:

   ```
   HKEY_LOCAL_MACHINE\Software\Microsoft\WindowsNT\
   CurrentVersion\Winlogon
   ```

5. Create a new string value to permit auto logon for the default user. Select the **Edit** menu, select **New** and then select **String Value**.

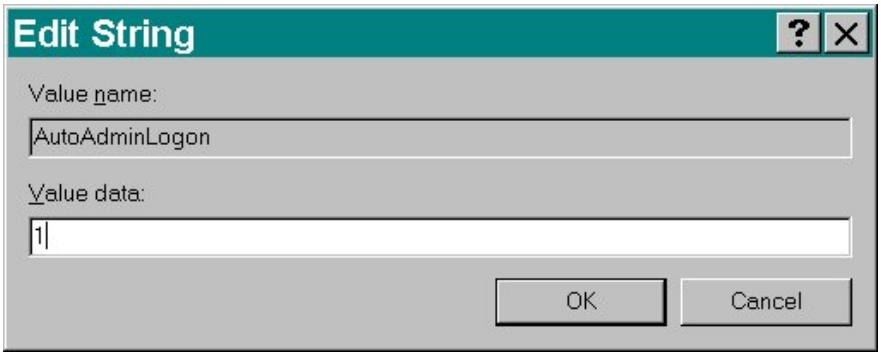


6. Name the new entry **AutoAdminLogon**.



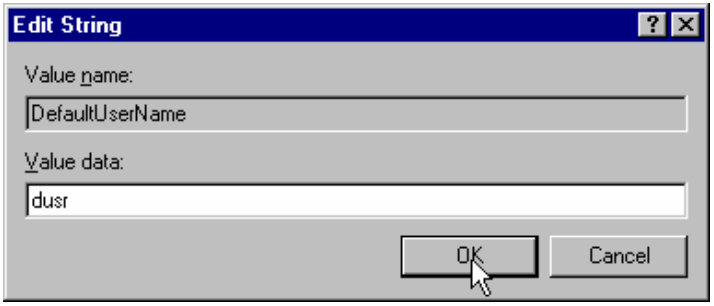
7. With the new entry selected, select the **Edit** menu and then select **Modify**. Enter the value 1 for auto-logon.

   A value of 0 sets it to no auto-logon.



8. Select **OK** to set the value.

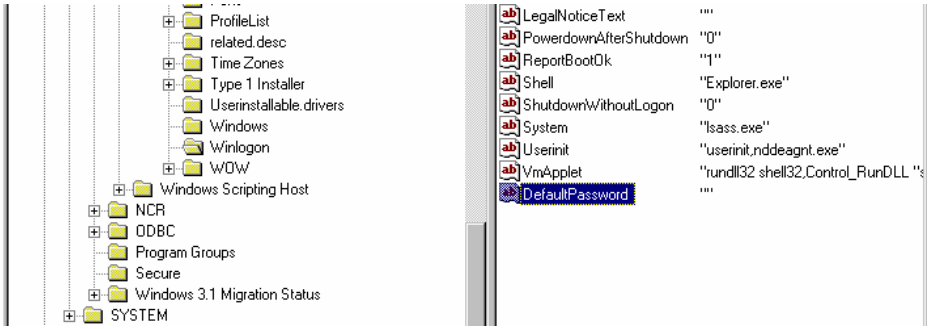
9. Modify the *DefaulUserName* to contain the user ID that you want to automatically logon. With the *DefaulUserName* selected, select the **Edit** menu and then select **Modify**. Enter the user ID.



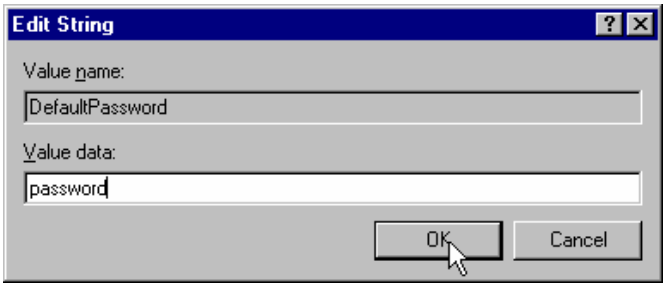
10. Select **OK** to set the value.

11. Create a new string value to contain the password for the default user. Select the **Edit** menu, select **New** and then select **String Value**.

12. Name the new entry **DefaultPassword**.



13. Edit the string value. With *DefaultPassword* selected, select the **Edit** menu and then select **Modify**. Enter the value of the password of the default user (from Step #1). The example below uses *password*.



14. Select **OK** to set the value.

This completes the client installation.

To bypass auto logon, and to log on as a different user, hold down the SHIFT key after a logoff or after a Windows NT restart.

Installing a Serial Mouse

Follow these steps to install a Serial Mouse on the terminal.

1. Edit the `boot.ini` file, which is located in the root of the C drive.
   a. Open Windows NT Explorer
   b. Go to the **View** menu and select **Folder Options**.
   c. Select the **View** tab.
   d. Scroll down until you see a folder that is labeled **Hidden Files**. Make sure the button labeled **Show All Files** is selected and then select OK.
   e. Select the C drive root directory. Scroll down until you find the file named `boot.ini` and select it.
   f. Open the **File** menu and then select **Properties**.
   g. Uncheck the box labeled **Read Only** and then select **OK**.
   h. Open the `boot.ini` file with Notepad. It should have the following entries:

```
[operating systems]
multi(0)disk(0)rdisk(0)partition(1)\WINNT="Windows
NT Workstation Version 4.00" /NoSerialMice

multi(0)disk(0)rdisk(0)partition(1)\WINNT="Windows
NT Workstation Version 4.00 [VGA mode]" /basevideo
/sos
```

2. Delete the text `/NoSerialMice`. The file should now look like:
3. Save the file and then restart the terminal with the serial mouse connected.

After the system restarts it will see the mouse and install the supporting drivers. The drivers are located on the hard drive at C:\install\i386. If for some reason they are not on the hard drive, connect the terminal to a network and share a CD-ROM drive with the NT Operating System disk installed, or copy the files needed to the network.

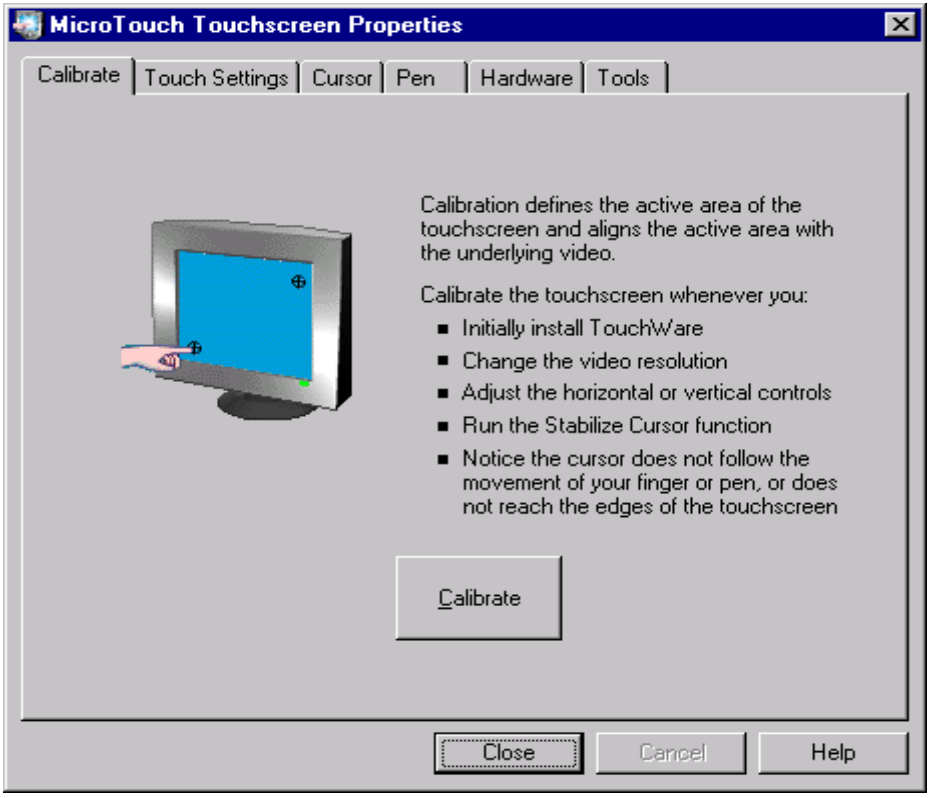
Calibrating the Touch Screen

Be sure to observe for the following Touch Screen calibration guidelines:

- Calibrate the touch screen as part of the installation process.
- Recalibrate the touch screen when the system is installed at its final location.
- Recalibrate whenever the terminal is moved to a new location.
- Recalibrate the touch screen anytime the system has been disassembled for servicing.
- The Touch Screen can be calibrated using MicroTouch (Windows) or Microcal (DOS), or it can be calibrated from the BIOS.

Calibration Using MicroTouch (Windows)

1. From the Windows Start button, select **Settings→Control Panel→MicroTouch Touchscreen**.
2. From the *MicroTouch Touchscreen Properties* screen, select **Calibrate** to begin calibration.

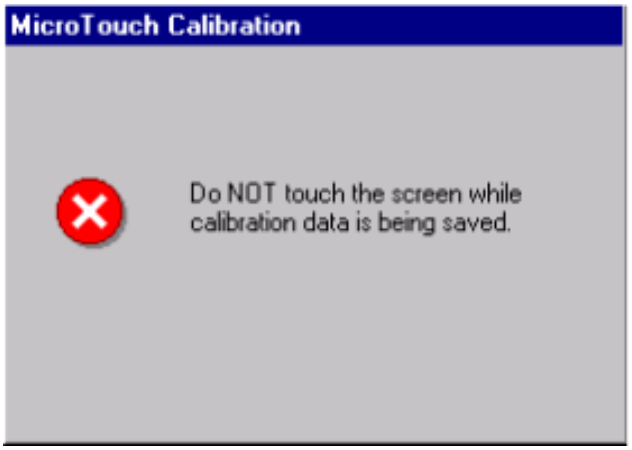

MicroTouch Touchscreen Properties
Calibrate
Touch Settings
Cursor
Pen
Hardware
Tools
Calibration defines the active area of the touchscreen and aligns the active area with the underlying video.
Calibrate the touchscreen whenever you:
Initially install TouchWare
Change the video resolution
Adjust the horizontal or vertical controls
Run the Stabilize Cursor function
Notice the cursor does not follow the movement of your finger or pen, or does not reach the edges of the touchscreen
Calibrate
Close
Cancel
Help

3. The following screen is displayed with two targets. Place your finger on the target that has a finger icon pointing towards it and hold it until the statement *Touch Enable* is displayed over the finger icon.

   Note: For best results, press the screen near the circle and then slide your finger onto the circle without raising your finger from the screen.

4. Using the same method as above, touch the circle near the upper-right corner of the screen.

5. The *MicroTouch Calibration* dialog box then appears. Do not touch the screen until this dialog box is no longer displayed.



6. From the *Calibration Complete* screen, select **Done**.
7. Select **Close** to exit the MicroTouch program.
8. From the Control Panel, select **File→Close** to exit the Control Panel.

Calibration Using Microcal (DOS)

The calibration program looks at where your finger is when you lift it off the screen, not where you touch it. Therefore, calibrate the screen as follows:

1. Touch the screen near the calibration target.
2. Keep your finger on the screen and slide it to the center of the target.
3. Hold your finger firmly on the target for two seconds, then lift it off quickly.
4. Verify that the calibration was set accurately before making a service call. Perform the calibration again if necessary.

If cursor is not stable, or false touches are suspected, run the Noise Check Utility from the Microcal program. Choose the recommended frequency (the one with the lowest noise level). This should also be done if the Touch Screen is still not calibrated after one attempt to recalibrate it.

1. Set the video resolution by going to the **Tools** menu, Video and selecting **800 x 600 256 colors**.
2. Go to the **Tools** menu, select **Noise Check**.
3. Follow the instruction prompts. Choose the frequency with the lowest noise level.

Application software can possibly generate a dialog box from the Touch Driver, with the message that the touch screen needs to be recalibrated. If the screen appears to be working normally, then this message can be ignored. There will be a check box labeled `Do not show this message again`. Make sure this box is checked.

Calibration From the BIOS

1. Apply power to the terminal.
2. When the screen prompt that says *Touch the screen two times to enter Setup* appears, wait for the **second** prompt to touch the screen, and then touch the screen **three** times. This causes the system to bypass the BIOS Setup and go directly to the Touch Screen Calibration Setup.
3. As instructed on the screen, touch the circle near the lower-left corner of the screen. For best results, press the screen near the circle and then slide your finger onto the circle without raising your finger from the screen.
4. Using the same method as above, touch the circle near the upper-right corner of the screen.

You should receive a *Successful Calibration* message and then the *PhoenixBIOS Setup Utility* should come up.

Summary

If there is a Touch Screen calibration issue during or after installation, take the following actions in the order listed:

1. Recalibrate.
2. If recalibration is unsuccessful after two attempts, then run the Noise check to change the frequency.
3. If you are still unable to calibrate, change the touch screen glass.
4. The final step is to replace the Processor Board. If this corrects the problem, then the old glass is probably OK to reuse.

Out-of-Box Failures

The RSD-Atlanta Customer Satisfaction Hotline will replace out-of-box failed hard disks with identical, preloaded drives. Once a system is successfully installed, all disk contents are the responsibility of the customer. The customer is responsible for restoring operating system software and/or customer-specific data onto replacement disks sent to repair a failed or damaged disk in the field. NCR provides recovery tools for the operating system and platform software.

Chapter 4: 7401-4xxx Hardware Installation

Introduction

The 7401-4xxx terminal is fully assembled at the factory. This chapter explains the mounting options and how to connect optional hardware components to the terminal.

Installation Summary

The terminal should be removed from the shipping packaging and visual checks made to verify the correct hardware configuration. The system is then configured and any communication cables are connected.

Only after inspection should the power cord be attached to the system and then connected to the AC power source. Power-up self-tests will run to verify basic functionality.

ROM-based setup should be used to configure network options. Full configuration depends upon the system server and the management web site.

U.K. Keyboard Configuration

Regional Options in the Control Panel must be configured for 7401-4xxx terminals equipped with a U.K. keyboard (F130, F131, or F132).

Windows 2000

1. From the Windows **Start** button, select **Settings** > **Control Panel** > **Regional Settings**.

2. On the **General** tab, select the **Down** arrow in the *Your locale (location)* box and select **English (United Kingdom** from the list.
3. Select the **Input Locales** tab.
4. Select the **Add** button under the *Input language* window.
5. Select the **Down** arrow in the *Input locale:* box and select **English (United Kingdom)** from the list.
6. Select the **Down** arrow in the *Keyboard layout/IME*: box and select **United Kingdom** from the list.
7. Select the **OK** button.
8. Highlight the **EN English (United Kingdom)** option in the *Input language* window and select the **Set as Default** button.
9. At the bottom of the dialog, select the **Apply** button and then the **OK** button.
10. Restart Windows.

Windows XPe

1. From the Windows **Start** button, select **Control Panel** > **Regional and Language Options**.
2. On the **Regional Options** tab, select the **Down** arrow in the *Standards and formats* section and select **English (United Kingdom)** from the list.
3. In the *Location* section, select the **Down** arrow and select **United Kingdom** from the list.
4. Select the **Languages** tab.
5. Select the **Details** button in the *Text services and input languages* section.
6. Select the **Add** button in the *Installed services* section.

7. On the **Add Input language** dialog, select the **Down** arrow in the *Input language* box and select **English (United Kingdom)** from the list.
   Verify that **United Kingdom** displays in the *Keyboard layout/IME*: box.
8. Select the **OK** button.
9. On the **Settings** tab, select the **Down** arrow in the *Default input language* section and select **English (United Kingdom) – United Kingdom** as the default.
10. At the bottom of the dialog, select the **Apply** button and then the **OK** button.
11. Exit the Control Panel.

Windows NT

1. From the Windows **Start** button, select **Settings** > **Control Panel** > **Regional Settings**.
2. On the **General** tab, select the **Down** arrow in the selection box and select **English (United Kingdom**) from the list.
3. Select the **Input Locales** tab.
4. Highlight the **EN English (United Kingdom)** option in the *Input locales* window and select the **Properties** button.
5. Select the **Down** arrow on the *Keyboard layout* selection box and select **United Kingdom** from the list, then select the **OK** button.
6. Highlight the **EN English (United Kingdom)** option in the *Input locales* window and select the **Set as Default** button.
7. Select the **Apply** button. If the *Files Needed* dialog pops up, enter "C:\intall\i386" in the *Copy files from:* box and select the **OK** button.
8. Restart Windows.

Installation Restrictions

- Before installing the terminal, read and follow the guidelines in the *NCR EasyPoint 7401 Site Preparation Guide* and the *NCR Workstation and Peripheral AC Wiring Guide*.
- Install the terminal near an electrical outlet that is easily accessible. Use the power cord as a power-disconnect device.
- Do not permit any object to rest on the power cord. Do not locate the terminal where the power cord can be walked on.
- Use a grounding strap or touch a grounded metal object to discharge any static electricity from your body before servicing the terminal.
- If the power cord is replaced, it must be replaced with the same type of cord with the protective shroud.
- Do not route the power cord through openings with sharp edges.

Caution: This unit contains hazardous voltages and should only be serviced by qualified service personnel.

Caution: DO NOT connect or disconnect the transaction printer while the terminal is connected to AC power. This can result in system or printer damage.

Warning: The 7401 must be mounted securely to prevent a hazard. It must be installed in accordance with local building codes. When mounting the terminal on a table top, use care when lifting the terminal. The approximate weight is 90 lbs. (40.8 kg).

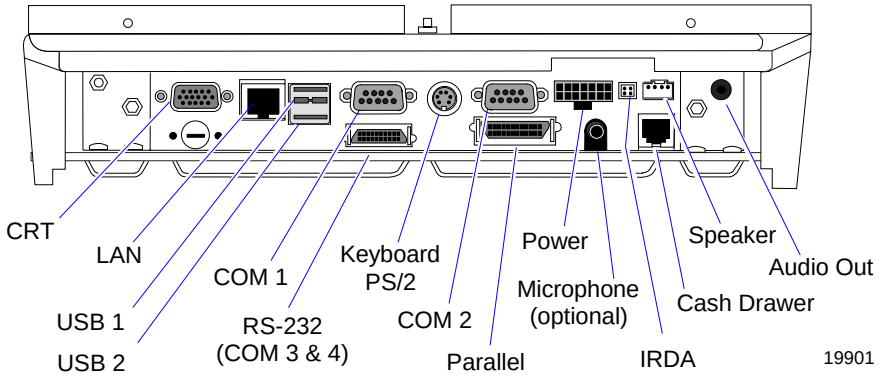
Connecting the Cables

The cable connectors are located under the Cable Cover in the front of the Core Module.

Cable Routing

The AC Power Cord and the LAN Cable can be routed either out the bottom or the rear of the cabinet. Other cables connected to the Core Module are routed internally to 7401-4xxx components within the cabinet.

Cable Connector Identification



Note: COM1 and COM3 can be powered ports. They are enabled in the BIOS.

Note: The COM3 & COM4 RS-232 ports require the *Dual RS-232 Port Kit* (7454-F072) feature

Installing Peripherals

The following peripherals are integrated into the 7401-4xxx terminal. Removal procedures are covered in the *NCR EasyPoint 7401 Hardware Service Guide* (B005-0000-1341).

- Full page printer
- Motorized Card Reader
- U.S. and UK ruggedized keyboards with trackball
- Pin Pad

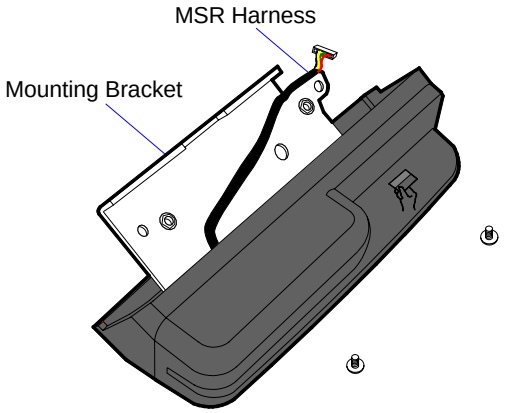
The following peripherals are field installable devices. Installation instructions are provided in the sections that follow.

- Angled Magnetic Stripe Reader (7401-F103)
- Country keyboards - used with Custom keyboard shelf (7401-F118)

Before installing any new device, unplug the 7401-4xxx AC power cord to remove power from the terminal.

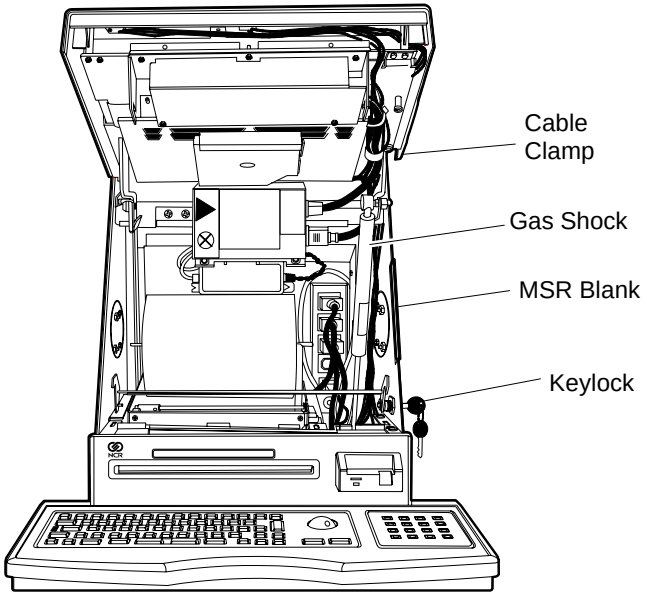
Installing the Angled Magnetic Stripe Reader (MSR)

A 3-track ISO Angled MSR is an optional feature available with the 7401-4xxx terminal and also available as a kit (7401-K103).



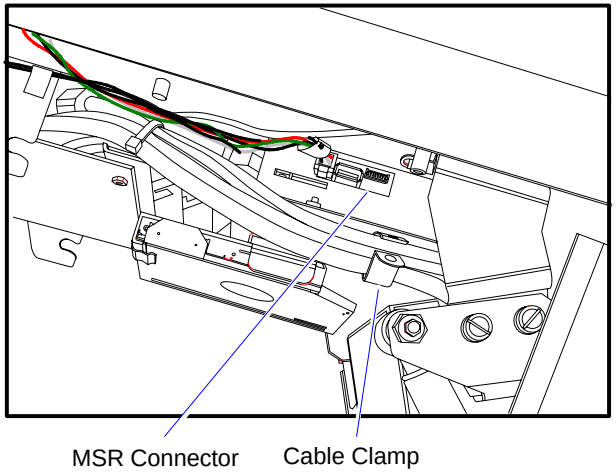
19902

1. Use the following steps to install the Angled MSR
2. Unlock the Cabinet Keylock.



19798a

3. Lift the door until it is supported on the Gas Shock.
4. Remove the MSR Blank from the right side of the Cabinet.
5. Remove the Cable Clamp.
6. Plug the MSR cable into the MSR Connector on the Core Module.



19904a

7. Attach the MSR assembly using the MSR Mounting screws (2).
8. Attach the Cable Clamp removed in step 5 to the MSR Mounting Bracket (rear hole).

Installing Country Keyboards

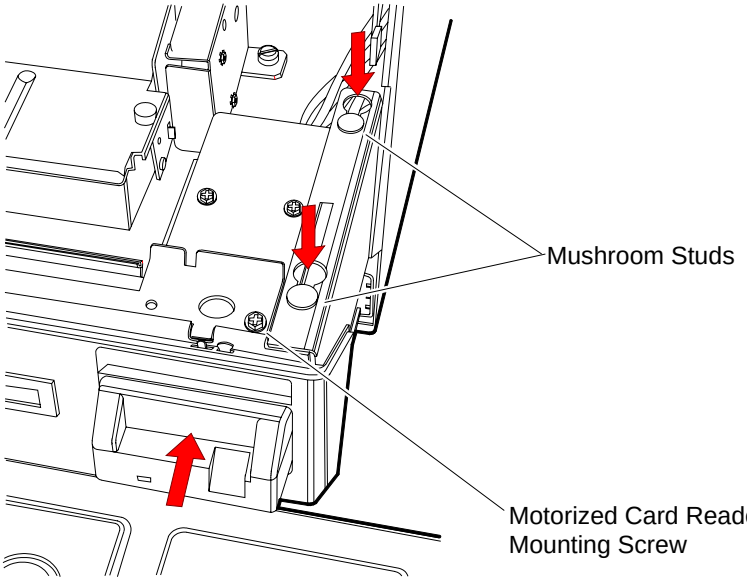
The following international country keyboards are shipped separate from the 7401-4xxx terminal and must be installed in the field. The required keyboard and trackball cables are pre-installed in the 7401-4xxx keyboard tray.

- Swedish/Finnish Rugged Keyboard (2336-K206)
- Italian Rugged Keyboard (2336-K207)

Use the following procedures to install a country keyboard.

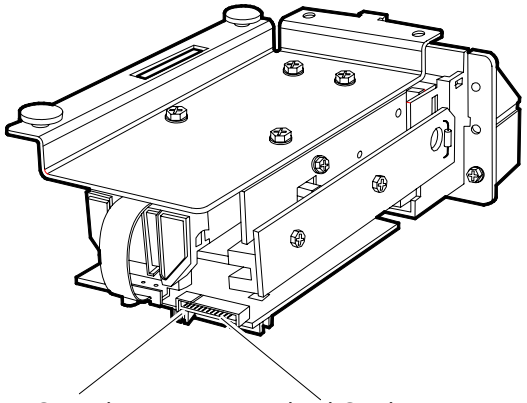
1. Unplug the power cord to remove power from the terminal.

2. Unlock the cabinet lock and raise the core module door to open the cabinet.
3. Slide the Keyboard Drawer forward until it stops.
4. Remove the Motorized Card Reader Mounting Screw.

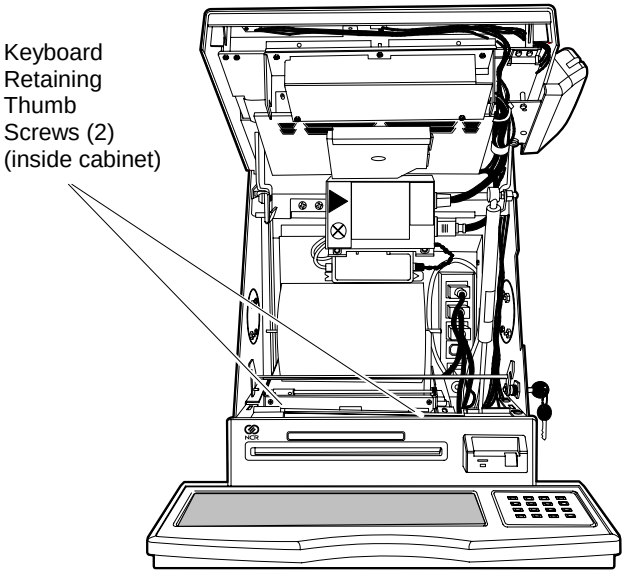


5. Slide the Motorized Card Reader back and lower the unit until the Mushroom Studs are clear of the retaining holes.

6. Unplug the two cables from the connectors at the rear of the Motorized Card Reader.

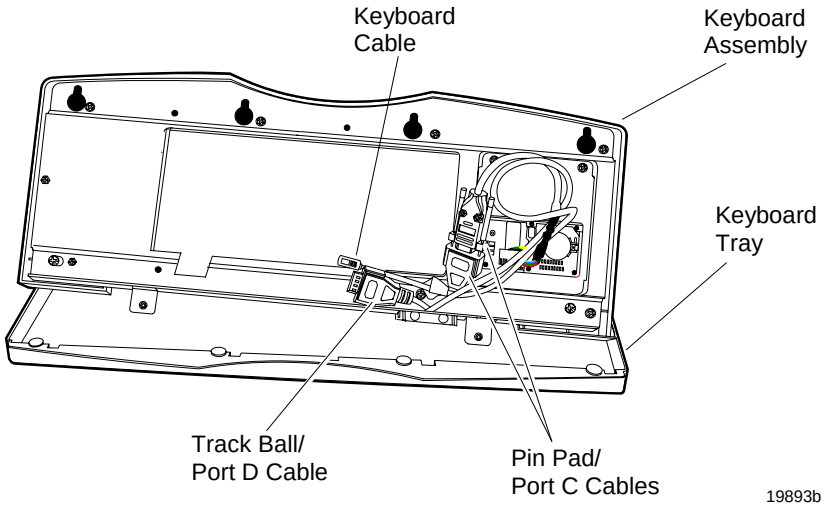


7. Loosen the Keyboard Retaining Thumb Screws (2).

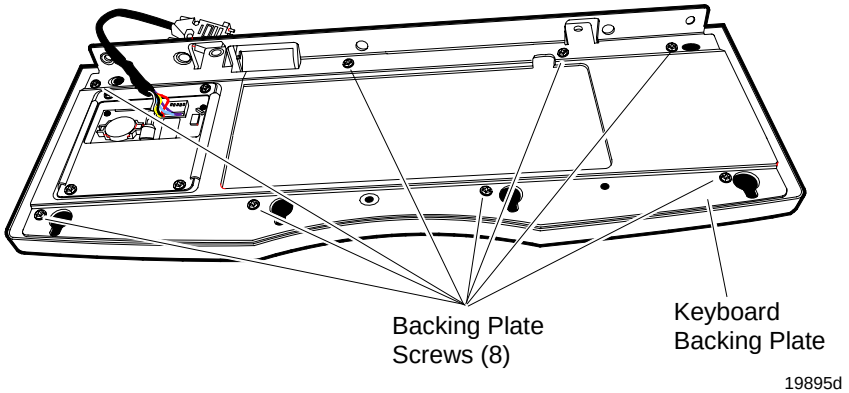


8. Slide the Keyboard Drawer closed.

9. Pull the Keyboard Assembly forward, lift the assembly off the mushroom studs, and tilt the assembly up as shown below.

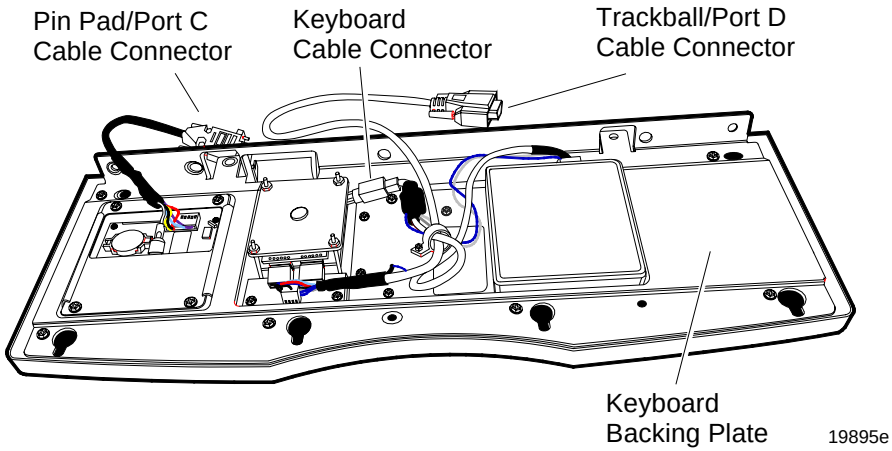


10. Disconnect the Pin Pad/Port C cable and remove the cables out through the hole in the Keyboard Assembly.
11. Lay the Keyboard Assembly on a flat surface.



12. Remove the Keyboard Backing Plate.

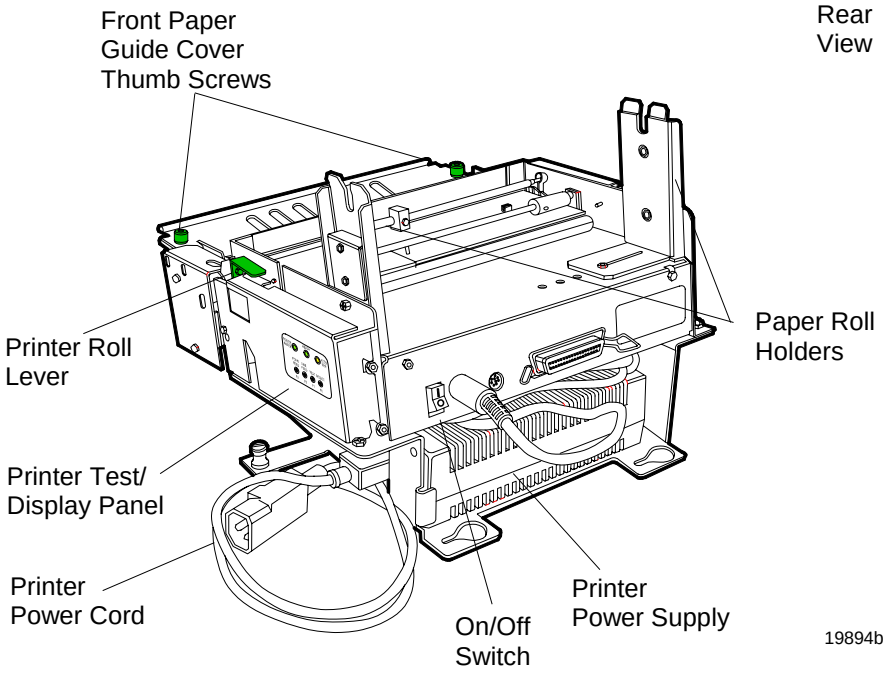
13. Insert the new keyboard.



14. Install the Keyboard Backing Plate (8 screws).
15. Insert the cables through the hole in the Keyboard Assembly
16. Connect the cables (3).
17. Open the Keyboard Drawer to take up the slack in the cables.
18. Insert the Keyboard Assembly onto the mushroom studs in the Keyboard Tray.
19. Tighten the Keyboard Retaining Thumb Screws (2).
20. Install the MSR
21. Install the MSR cables.
22. Slide the Keyboard Drawer closed.
23. Lower the core module door.
24. Lock the cabinet lock.

Using the Full Page Printer

The 7401-4xxx has a full page thermal printer to provide the customer with a record of their transaction. The printer is located inside the secure cabinet and issues the printed transaction record out a slot above the keyboard in the front of the cabinet.



Loading the Paper

1. Place the paper roll on the spindle.
2. Install the spindle in the slots of the paper roll holders with paper feeding off the bottom of the roll towards the front of the terminal.
3. Feed the paper into the rear paper guide until the auto-load mechanism senses the paper and feeds the paper out the front of the cabinet.

Note: The printhead lever must be closed for auto-loading to function.

Removing Paper from the Printer Feed Rolls

If paper becomes jammed in the printer feed rolls:

1. Unlock the cabinet Keylock.
2. Raise the bottom of the Display Module Door until fully open and supported by the Gas Shock.
3. Slide the Keyboard Tray forward until it stops.
4. Lift the printhead lever.
5. Loosen the two thumb screws and remove the Front Paper Guide Cover.
6. Remove the paper.

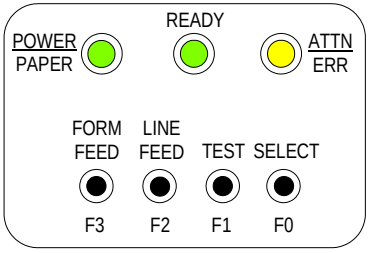
Note: You can also feed paper manually using the Form Feed button on the Printer Switch and Display Panel. Refer to the "Using the Printer Test and Display Panel" section for details.

Removing Power from the Printer

The printer has an On/Off switch located on the back of the printer and has a separate Power Supply located under the printer. The Printer Power Supply is plugged into the bottom connector of the Power Strip inside the terminal cabinet. Use either of the following methods to remove power:

- Press the On/Off Switch to the Off position.
- Unplug the Printer Power Supply plug from the Power Strip.

Using the Printer Test and Display Panel



19961

Display LED Indicators

The LEDs provide the following status information:

PAPER/POWER (green)

Status	Indication
Printer OK	Very short *Off* blink every 14 seconds
DC power	*On* or *Flashing* when power is on
Paper supply	Rapid *On-Off* 50% cycle flashing when out of paper
Paper low	Rapid *On-Off* 50% cycle flashing when paper low
Diagnostic mode	10 % *On* and 90% *Off* when in diagnostic mode

READY (green)

Status	Indication
System ready	*On* = System ready to accept data *Off* = Not ready
Data flow	During receipt of data, LED *blinks* following state of the Busy signal
Reverse channel	When not printing during IEEE-1284 reverse channel status, LED *blinks* after PtrBus signal flow

ATTN/ERR (yellow)
Used with the buzzer to indicate the following conditions:

Status	Indication
Switch press	Short *flash/beep* when Switch F0-F3 are pressed
System warnings	*Flashing/beeping* to alert operator of low paper or out of paper condition
System error codes	Repeating sequence of coded *flash/beep* tones (used during factory/depot repair)
Normal display	*Off*

Panel Switches

The four momentary push button switches (F0-F3) are used for manual interaction with the printer.

F0/SELECT
Places the printer in On-line or Off-line (Test) mode. The READY LED is off when the printer is in Test mode. The ATTN/ERR LED blinks and the beep tone sounds every 14 seconds to indicate the printer is Off-line.

F1/TEST
Alternately prints one of two test pages.

- One page is a short 85 mm (3.5 in.) page with that identifies the printer and the printer manufacturer.
- The second page is a full 280 mm (11 in.) page with the same information plus multiple lines of alphanumeric data scrolling across the page.

F2/LINE FEED

Advances the paper approximately 3 mm (0.1 in.) to test simple paper movement.

F3/FORM FEED

Advances the paper one form length. The length of the paper feed depends on printer setup.

F0 and F1 (Cutter Test)

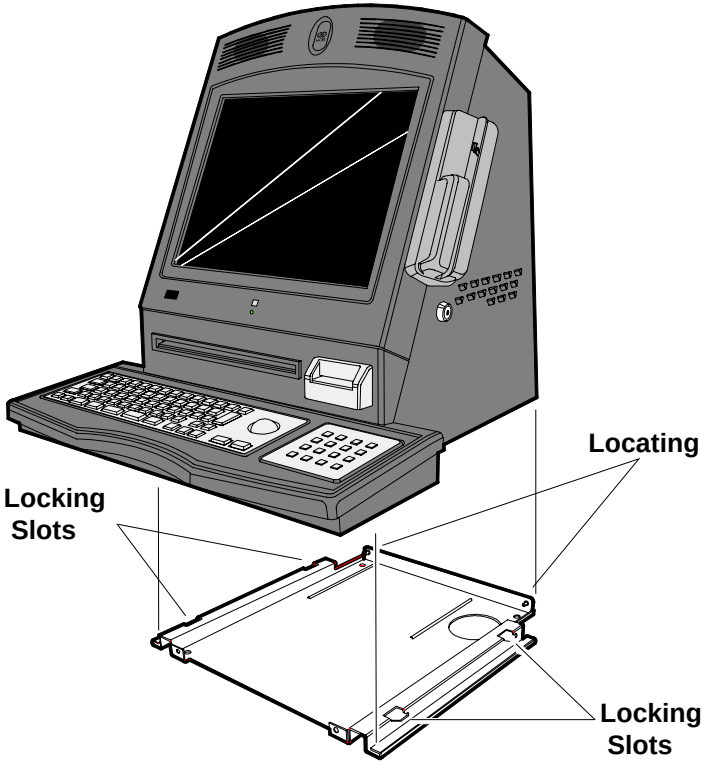
Test the paper cutter. Feeds a short blank length of paper and actuates the paper cutter. The switches must be released at the same time.

Full Page Printer Diagnostics and Setup

The 7401-4xxx full page printer is replaceable in the field as a complete module. Field-level diagnostics and setup are not typically performed on site. Refer to the *NCR EasyPoint 7401 ATX 38 Printer User's Manual* (B005-0000-1454) for diagnostic and setup information.

Installing a 7401-4xxx on a Table Top Mount

A 7401-4xxx terminal attached to a Table Top Mount can be installed on any flat work surface following the height guidelines shown in the *NCR EasyPoint 7401 Site Preparation Guide* (B005-0000-1255).



Mounting Procedures

1. Using the Table Top Mount as a template, position the Mount on the surface where the terminal is to be located and mark all hole locations with a pencil.

To locate the 7401-4xxx terminal so the edge of the Keyboard Tray is even with the edge of the table top, locate the front edge of the Table Top Mount 210 mm (8.25 in.) from the edge of the mounting surface.

2. Drill pilot holes or through holes for the mounting screws (4) or mounting bolts. Screws or bolts used for mounting the terminal are not provided with the mount and must be purchased locally. The holes in the mount are xx mm (xx in.) in diameter.
3. Drill the hole to route the cables out the bottom of the terminal, if using that cable routing solution.
4. Secure the Table Top Mount to the mounting surface.

   Note: When the front edge of the Table Top Mount is located away from the edge of the mounting surface, it may be necessary to remove the Motorized Card Reader, Keyboard, and Sliding Drawer assembly *before placing the terminal onto the mount* to provide access to the mounting screws. Refer to the "Accessing the Mounting Screws" section below for details.

5. Lower the terminal onto the Mount aligning the locking pins (4) on the bottom of the terminal with the slots in the mount.

   Caution: Use care when lifting the terminal. The 7401-4xxx terminal weighs approximately 90 lbs. (40.8 kg).
6. Push the terminal to the back until the locating pins (2) in the back of terminal are fully engaged into the holes in the mount.
7. Secure the terminal to the mount using the 8x32 screws (2).

Accessing the Mounting Screws

The following steps describe how to remove the Motorized Card Reader, Keyboard, and Sliding Drawer assembly to provide access the mounting screws.

1. Unlock the cabinet lock and raise the core module door to open the cabinet.
2. Slide the Keyboard Tray forward until it stops.
3. Remove the Motorized Card Reader (if present) as described in the "Removing the Motorized Card Reader" section in Chapter 4 of the *NCR EasyPoint 7401 Hardware Service Guide* (B005-0000-1341).
4. Remove the Keyboard as described in the "Removing the Keyboard Assembly" section in Chapter 4 of the *NCR EasyPoint 7401 Hardware Service Guide* (B005-0000-1341).
5. Feed the cables through the hole in the Keyboard Tray.
6. Release the Rail Latches and remove the Sliding Drawer assembly.
7. Remove the two screws holding the terminal to the mount.

Installing a 7401-4xxx on the EasyPoint 45 Pedestal

The 7401-4xxx terminal is shipped with the Table Top Mount attached. Use the following procedure to mount a 7401-4xxx terminal on an EasyPoint 45 Pedestal.

1. Unlock the Keylock.
2. Open the Display Door.
3. Slide the Keyboard Tray forward to access and remove the Table Top Mount screws (2) under the keyboard at the front of the terminal.
4. Slide the Remove the Table Top Mount from the bottom of the terminal.
5. Attach the Table Top Mount to the top of the pedestal using the four (4) screws.

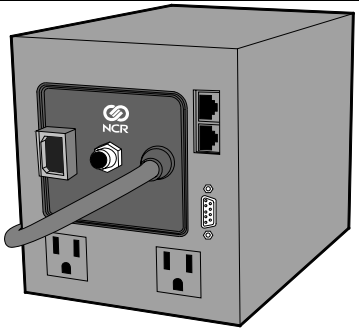
   The EasyPoint 45 pedestal may be secured to the floor before mounting the 7401-4xxx terminal onto the pedestal. Two 12.7 mm (0.5 in.) holes are provided in the base of the pedestal. Use 11 mm or 12 mm (0.375 in. to 0.5 in.) bolts or lag screws to secure the pedestal to the floor.

   Refer to the *NCR EasyPoint 7401 Site Preparation Guide* (B005-0000-1255) for floor mounting details.
6. Route the AC power cord and network cable (if used) out the hole in the bottom of the terminal and through the hole in the Table Top Mount.
7. Slide the terminal into the Table Top Mount being careful not to pinch the cables.
8. Secure the terminal to the Table Top Mount using the screws (2) removed in Step 3.

4055 Uninterruptible Power System (UPS)

The NCR 4055 UPS is available in two models for the 7401:

Item	Description	Volt/Hz
4055-1300-7194	300 VA/180 Watt Kiosk UPS	120 Volt/60 Hz
4055-1500-7194	500 VA/300 Watt Kiosk UPS	120 Volt/60 Hz



19412

Power Mon II® Software (G099-4551-0100) is recommended for use with the 4055 UPS and the 7401.

Note: On Windows 2000, the Power Mon software may appear to not fully shut the system down. In such cases you may still see a dim display. This does not cause the loss of any data.

Installing the UPS

Refer to the User's Manual delivered with the NCR 4055 UPS before installing the UPS for use with the 7401.

To install the UPS with the 7401 connect the power cable and the LAN cable from the 7401 to the UPS. Then connect the in-house LAN cable to the UPS, and the power cable on the UPS to the AC power outlet.

Note: If you are installing 7401-4xxx on the EasyPoint 45 Pedestal, the UPS must be installed first. See 2336-K045 Feature Kit for more information.

Installing the Power Mon II® Software

The Power Mon II® software is provided on CD-ROM and may be installed over a network or using an integrated or parallel CD-ROM drive. All operating system versions of the Power Mon software and installation documentation are contained on the CD.

The Power Mon installation should auto start. If it doesn't, browse the CD for the operating system you are using and run Setup.exe for that operating system. Follow the prompts to install the software.

Note: When you are prompted for Configuration Code, enter **7** to identify the interface cable type.

Configuring the Power Mon II® Software

Once Power Mon is installed, configure the software by clicking on the Power Mon icon. Select "Configure UPS" to configure the UPS parameters such as voice messages and battery run time.

Note: Battery run time for the 4055 UPS running with a 7401-4xxx and a Full-page Thermal Printer at a load of 150 VA is approximately:

Item	Approximate Battery Run Time
300 VA (180 W)	13 minutes*
500 VA (300 W)	23 minutes*

* Times are approximate and may vary due to modified configurations, environmental conditions, ambient temperature, battery age, and other factors.

Reference *NCR EasyPoint 7401Site Preparation (B005-0000-1255)* for additional power requirements for the 7401.

Finalizing the Installation

After the hardware installation has been completed, the terminal can be powered up to finalize the installation. The operating system, along with platform modifications, is pre-installed. The following sections list the steps involved to complete the system installation for each of the Gold Disk operating systems.

Completing the OS Installation (Win2000)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. After the terminal reboots, it will perform a disk check and then continue with the Windows 2000 installation.
2. Enter the *User Name* and *Organization*.
3. Enter the *Computer Name* for the client.
4. Enter the *Administrator's Account Password* (optional)
5. When prompted, press *Finish* to reboot the client.
6. Login when prompted.
7. Run the MicroTouch screen calibration from the Desktop icon.

Completing the OS Installation (WinXPe)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. Click the Admin button to login as Administrator.

2. Read the EULA (End-User License Agreement) information in the DOS window, then type **EXIT** and press **Enter** to close the DOS window.
3. Start the Network Setup Wizard.
4. Select options to identify the network information for the terminal environment.
5. Enter the *Computer Description*.
6. Enter the *Computer Name*.
7. Enter the *Workgroup Name*.
8. When prompted, press *Finish* to reboot the terminal.
9. Log in when prompted.

Open the Control Panel or use the TouchWare Icon on the desktop and run the MicroTouch screen calibration.

Completing the OS Installation (WinNT)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. After the terminal reboots, press *Next* at the Windows Setup screen.
2. Accept the Microsoft license agreement.
3. Enter the *User Name* and *Organization*.
4. Enter the *Computer Name* for the client.
5. Enter the *Administrator's Account Password* (optional)
6. When prompted, press *Finish* to reboot the client.
7. Log in when prompted.
8. Open the Control Panel and run the MicroTouch screen calibration.

Completing the OS Installation (Win98) - (Discontinued)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. When the terminal boots it enters the Windows setup routine.

   Note: When installing Win98 on terminals with Processor Boards (7401-21xx/31xx) there are few differences in the procedure as follows:

   d) The terminal starts the *Add New Hardware Wizard*.

   e) For each device found, permit Windows to search for new drivers (take defaults).

   f) After each driver is installed you are asked to reboot. Answer **No**.

2. At the **User Information** screen, enter the *User* information. This can be done using a keyboard or you can use the touch screen keyboard. After entering the information, press **Enter** or touch **OK**.

3. Go into the Control Panel and set the terminal Date and Time.

In the Control Panel, run the MicroTouch screen calibration.

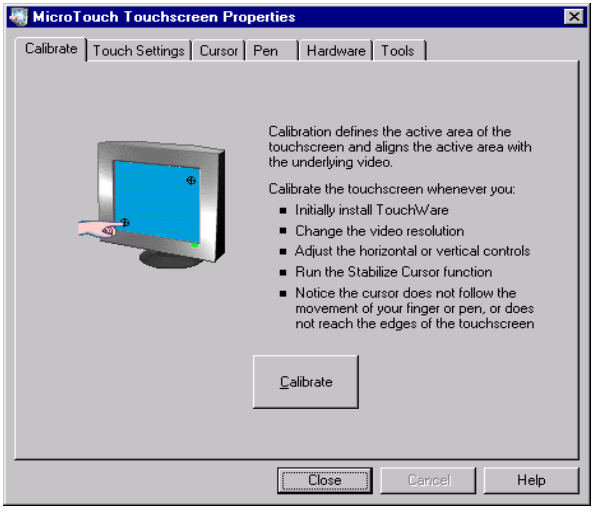
Calibrating the Touch Screen

Be sure to observe for the following Touch Screen calibration guidelines:

- Calibrate the touch screen as part of the installation process.
- Recalibrate the touch screen when the system is installed at its final location.
- Recalibrate whenever the terminal is moved to a new location.
- Recalibrate the touch screen anytime the system has been disassembled for servicing.
- The Touch Screen can be calibrated using MicroTouch (Windows) or Microcal (DOS), or it can be calibrated from the BIOS.

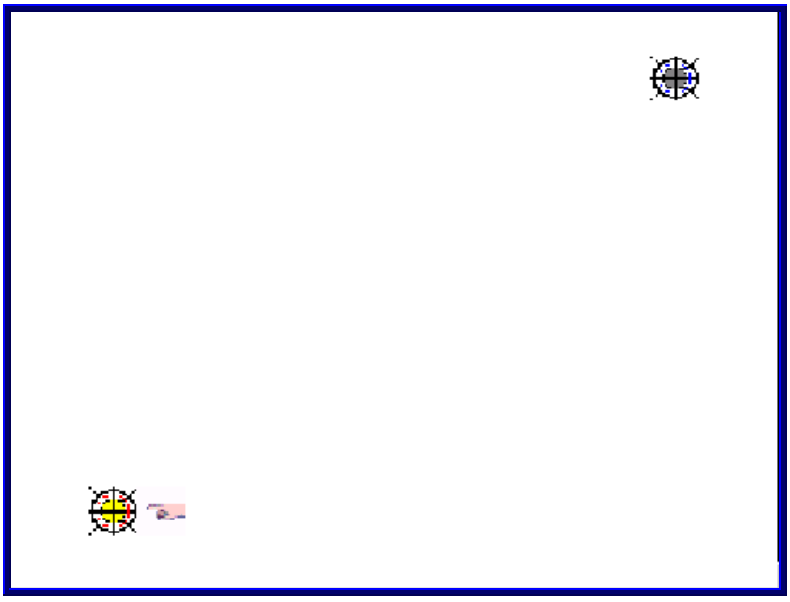
Calibration Using MicroTouch (Windows)

1. From the Windows **Start** button, select **Settings→Control Panel→MicroTouch Touchscreen**.
2. From the *MicroTouch Touchscreen Properties* screen, select **Calibrate** to begin calibration.


MicroTouch Touchscreen Properties
Calibrate
Touch Settings
Cursor
Pen
Hardware
Tools
Calibration defines the active area of the touchscreen and aligns the active area with the underlying video.
Calibrate the touchscreen whenever you:
Initially install TouchWare
Change the video resolution
Adjust the horizontal or vertical controls
Run the Stabilize Cursor function
Notice the cursor does not follow the movement of your finger or pen, or does not reach the edges of the touchscreen
Calibrate
Close
Cancel
Help

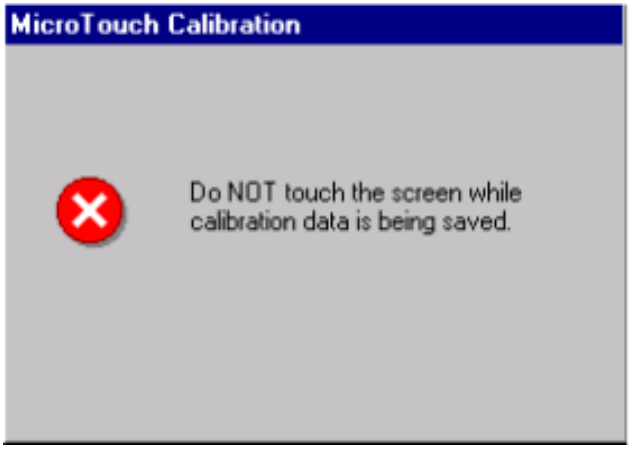
3. The following screen is displayed with two targets. Place your finger on the target that has a finger icon pointing towards it and hold it until the statement *Touch Enable* is displayed over the finger icon.

   Note: For best results, press the screen near the circle and then slide your finger onto the circle without raising your finger from the screen.



4. Using the same method as above, touch the circle near the upper-right corner of the screen.

5. The *MicroTouch Calibration* dialog box then appears. Do not touch the screen until this dialog box is no longer displayed.



6. From the *Calibration Complete* screen, select **Done**.
7. Select **Close** to exit the MicroTouch program.
8. From the Control Panel, select **File→Close** to exit the Control Panel.

Calibration Using Microcal (DOS)

The calibration program looks at where your finger is when you lift it off the screen, not where you touch it. Therefore, calibrate the screen as follows:

1. Touch the screen near the calibration target.
2. Keep your finger on the screen and slide it to the center of the target.
3. Hold your finger firmly on the target for two seconds, then lift it off quickly.
4. Verify that the calibration was set accurately before making a service call. Perform the calibration again if necessary.

If cursor is not stable, or false touches are suspected, run the Noise Check Utility from the Microcal program. Choose the recommended frequency (the one with the lowest noise level). This should also be done if the Touch Screen is still not calibrated after one attempt to recalibrate it.

5. Set the video resolution by going to the **Tools** menu, Video and selecting **800 x 600 256 colors**.
6. Go to the **Tools** menu, select **Noise Check**.
7. Follow the instruction prompts. Choose the frequency with the lowest noise level.

Application software can possibly generate a dialog box from the Touch Driver, with the message that the touch screen needs to be recalibrated. If the screen appears to be working normally, then this message can be ignored. There will be a check box labeled `Do not show this message again`. Make sure this box is checked.

Calibration from the BIOS

1. Apply power to the terminal.
2. When the screen prompt that says *Touch the screen two times to enter Setup* appears, wait for the **second** prompt to touch the screen, and then touch the screen **three** times. This causes the system to bypass the BIOS Setup and go directly to the Touch Screen Calibration Setup.
3. As instructed on the screen, touch the circle near the lower-left corner of the screen. For best results, press the screen near the circle and then slide your finger onto the circle without raising your finger from the screen.
4. Using the same method as above, touch the circle near the upper-right corner of the screen.

You should receive a *Successful Calibration* message and then the *PhoenixBIOS Setup Utility* should come up.

Summary

If there is a Touch Screen calibration issue during or after installation, take the following actions in the order listed:

1. Recalibrate.
2. If recalibration is unsuccessful after two attempts, then run the Noise check to change the frequency.
3. If you are still unable to calibrate, change the touch screen glass.
4. The final step is to replace the Processor Board. If this corrects the problem, then the old glass is probably OK to reuse.

Out-of-Box Failures

The RSD-Atlanta Customer Satisfaction Hotline will replace out-of-box failed hard disks with identical, preloaded drives. Once a system is successfully installed, all disk contents are the responsibility of the customer. The customer is responsible for restoring operating system software and/or customer-specific data onto replacement disks sent to repair a failed or damaged disk in the field. NCR provides recovery tools for the operating system and platform software.

Chapter 5: Setup

Introduction

This chapter describes how to configure the BIOS CMOS options. Following this *Introduction*, there are sections specific to 7401-22xx/35xx/45xx terminals with BIOS Version 2.2.1.x (Pentium III/Celeron processors), 7401-26xx/46xx terminals with ACPI BIOS Version 2.3.x.x (Pentium III/Celeron processors), and to 7401-21xx/31xx terminals with BIOS Version 1.5.0.4 (Pentium processor). This older BIOS, version 1.5.0.4, is discontinued but is included in this chapter for reference purposes.

Note: An external alphanumeric keyboard is not required to run the BIOS CMOS Setup Utility, but a keyboard makes the setup easier.

Entering Setup without a Keyboard

1. Apply power to the terminal.
2. Calibrate the touch screen.
   a) When the screen prompt that says *Touch the screen two times to enter Setup* appears, touch the screen **three** times. This causes the system to bypass the *BIOS Setup* and go directly to the Touch Screen Calibration Setup. With Pentium III/Celeron terminals, you will not see this prompt if the Boot-Time Diagnostics Screen is disabled, but you can still enter setup by touching the screen **three** times.

      Note: Setup can also be entered from the Boot Menu that is displayed when you press **ESC** during POST.

b) As instructed on the screen, touch the circle near the lower-left corner of the screen. For best results, press the screen near the circle and then slide your finger onto the circle without raising your finger from the screen.

c) Using the same method as above, touch the circle near the upper-right corner of the screen.

   You should receive a *Successful Calibration* message and then the *PhoenixBIOS Setup Utility* should come up.

d) Select the setup parameters by touching the controls at the bottom of the screen.

Entering Setup Using a Keyboard

1. Apply power to the terminal.
2. Press the **F2** key when the message at the bottom of the screen prompts you to do so. With Pentium III/Celeron terminals, you will not see this prompt if the Boot-Time Diagnostics Screen is disabled, but you can still enter setup by pressing **F2**.

   Note: Setup can also be entered from the Boot Menu that is displayed when you press **ESC** during POST.

How to Select Menu Options

The following keyboard controls are used to select the various menu options and to make changes to their values.

- Use the arrow keys to select (highlight) options and menu screens.
- Use the + and - (or **F5** and **F6**) keys to change field values.
- To view help information on the possible selections for the highlighted item, press **F1**.
- To save the changes, move the cursor to the *Exit Menu*, select either *Save Changes & Exit* or *Save Changes*, and press **Enter**.

Note: If you are not using an external keyboard, you can touch the menu controls at the bottom of the screen. If you encounter difficulty doing this, recalibrate the screen.

Setting the Date and Time

To set the date and time, perform the following steps:

1. In the Setup *Main* menu, move your cursor to the *System Time* field, type the desired value, and press **Tab** or **Enter** to continue with the next field.
2. Enter the desired date in the *System Date* field the same way as the last step.
3. Move the cursor to the *Exit* menu, select ***Exit Saving Changes*** or ***Save Changes***, and press **Enter**.

Setting Passwords

To set passwords, perform the following steps:

1. Move the cursor to the *Set Supervisor Password* selection and press **Enter**. The *Set Supervisor Password* menu displays. From this menu, the person setting up the password system can set the security password. Users can set user passwords.
2. Move the cursor to the *Exit* menu, select *Exit Saving Changes* and press **Enter**.

Note: Only clear a password after obtaining the permission of the responsible supervisor.

If the supervisor password is lost, it can be cleared by shorting the appropriate pins on the main processor board. For the location of these pins, refer to the *EasyPoint 7401 Hardware Service Guide*.

If the user password is lost, and the supervisor is not available, then the above procedure can be used to clear the supervisor password. Then new supervisor and user passwords can be defined.

Configuring a Hard Drive

Note: Primary Master, Secondary Master, Primary Slave and Secondary Slave refer to the IDE drives.

After installing a hard drive, you need to configure the hard drive using Setup. Perform the following steps:

1. On the Setup *Main* menu, select the appropriate IDE Adapter (such as, *Primary Master*) field and press **Enter**. A sub-menu displays for the Primary Master drive that you selected.
2. Press **Enter** on the *Type* field. The workstation automatically fills out the remaining fields, depending on the installed drive.
3. Move the cursor to the *Exit* menu, select *Exit Saving Changes* and press **Enter**.

Setting Memory Cache

The default setting enables memory cache. If your application requires memory cache to be disabled, you can change it by performing the following steps:

1. Move the cursor to the *Cache Memory* field on the *Advanced* menu and press **Enter**. The *Cache Memory* **m**enu displays.
2. Select *Enabled* in the *Memory* ***Cache*** field to enable the memory cache.
3. Set the other fields on this menu as desired. Select *Help* for more information.
4. Move the cursor to the *Exit* menu, select *Exit Saving Changes* and press **Enter**.

Setting Memory Shadow

The default setting enables memory shadow. This can increase your workstation's performance. *This applies only if your workstation has a plug-in video board*. If you want to disable the memory shadowing, perform the following steps:

1. Move the cursor to the *Memory Shadow* field on the *Main* menu and press **Enter**. The *Memory Shadow* **m**enu appears.
2. Select *Disabled* in the *Video Shadow* field to disable the video shadow.
3. Move the cursor to the *Exit* menu, select *Exit Saving Changes* or *Save Changes*, and press **Enter**.

Setting Boot Options

To set boot options, perform the following steps:

1. Move the cursor to the *Boot* menu. The list of boot devices displays.
2. Select the sequence of drives that the workstation will access when booting the system.
3. Move the cursor to the *Exit* menu, select *Exit Saving Changes* and press **Enter**.

Allocating Interrupts

On the 7401, limited control of interrupt allocation is provided through the BIOS Setup Utility. Due to the nature of the PCI bus, the Plug and Play subsystem allocates the interrupts of PCI devices using all available interrupts.

To free IRQ15, it is necessary to disable the secondary IDE bus. To do this, in the *Advanced* menu, choose **Primary** in the *Local BUS IDE adapter* selection.

To free IRQs 4, 3, or 7, in the *I/O Device Configuration* selection, disable COM A, COM B, or the Parallel port, respectively.

To finalize the freeing of interrupts and make unused interrupts available for use by PCI devices, it is necessary to reset the configuration data. This can be done in the *Advanced* menu.

To use ISA devices that require interrupts, it is necessary to reserve those interrupts so that those interrupts are not allocated by the BIOS to PCI devices. To do this, in the *Advanced* menu, choose *Advanced Chipset Control*. Choose *PCI/PNP IRQ Resource Exclusion*, then set all ISA interrupts to **Reserved**.

Restoring Factory Settings

To automatically reset all values to their default settings for the current screen, press **F9**. The terminal will automatically load BIOS default CMOS values for boot up.

To reset all BIOS settings to their default settings go to the *Exit* menu, press **F9**, select either *Save Changes & Exit* or *Save Changes*, and press **Enter**.

Refer to the “BIOS Default CMOS Values” section later in this chapter for the pre-installed Setup defaults.

BIOS Default CMOS Values (7401-22xx/35xx/45xx BIOS Version 2.2.1.x)

The following are the BIOS default CMOS values for the workstation.

Note: When installing a new BIOS from the CD, the Processor Board type is automatically detected and the correct BIOS is automatically installed

Main Values

Note: An asterisk (*) indicates a variable value based on system specification.

System Time	(variable)
System Date	(variable)
Legacy Diskette A:	Disabled
Legacy Diskette B:	Disabled
Primary Master	*
Type	Auto
Total Sectors	*
Maximum Capacity	*
Multi-Sector Transfers	16 Sectors
LBA Mode Control	Enabled
32 Bit I/O	Disabled
Transfer Mode	FPI0 4/DMA 2
Ultra DMA Mode	Mode 2
Primary Slave	None
Type	Auto
Multi-Sector Transfers	Disabled
LBA Mode Control	Disabled

32 Bit I/O	Disabled
Transfer Mode	Standard
Ultra DMA Mode	Disabled
Secondary Master	CD-ROM
Type	Auto
Multi-Sector Transfers	Disabled
LBA Mode Control	Disabled
32 Bit I/O	Disabled
Transfer Mode	FPI0 4/DMA 2
Ultra DMA Mode	Mode 2
Secondary Slave	None
Type	Auto
Multi-Sector Transfers	Disabled
LBA Mode Control	Disabled
32 Bit I/O	Disabled
Transfer Mode	Standard
Ultra DMA Mode	Disabled
System Memory	640 KB
Extended Memory	*

Advanced Values

Installed O/S	Other
Secured Setup Configuration	No
Reset Confirmation Data	NO
Cache Memory	

Memory Cache	Enabled
Cache System BIOS	Write Protect
Cache Video BIOS	Write Protect
Cache Base 0-512 k	Write Back
Cache Base 512K-640 k	Write Back
Cache Extended Memory	Write Back
Cache A000-AFFF	Disabled
Cache B000-BFFF	Disabled
Cache C800-CBFF	Disabled
Cache CC00-CFFF	Disabled
Cache D000-D3FF	Disabled
Cache D400-D7FF	Disabled
Cache D800-DBFF	Disabled
Cache DC00-DFFF	Disabled
Cache E000-E3FF	Write Protect
Cache E400-E7FF	Write Protect
Cache E400-E7FF	Write Protect
Cache EC00-EFFF	Write Protect
PS/2 Port	Touchscreen
USB Port 2	Auto
I/O Device Configuration	
Serial Port A	Enabled
Base I/O Address/IRQ	3F8/IRQ 4
Powered Port	Auto
Serial Port B	Enabled
Base I/O Address/IRQ	2F8/IRQ 3

Parallel Port	Enabled
Mode	ECP
Base I/O Address	378
Interrupt	IRQ 7
DMA Channel	DMA 1
Fdc on Lpt	Disabled
Floppy Disk Controller	Disabled
Serial Port C	Enabled
Mode	Normal
Base I/O Address	3E8
Interrupt	IRQ 5
Powered Port **Note:** Must be set to **On** for the 7401-4xxx with Pin Pad	Auto
Serial Port D	Enabled
Base I/O Address	2E8
Interrupt	IRQ 11
Mode	RS-232
Disk-On-Chip Address	CE00-CFFF
MSR Address	CC00-CDFF
MSR Interrupt	6
System Monitors	
+12 V Status	*
+ 2.5 V Status	*
+ 5 V Status	*
CPU Temperature	*

System Temperature	*
Vcc Status	*
Vcore Status	*
Vlcd Status	*
Vtt Status	*
Multiple ROM Menu	
Parallel CD-ROM Boot	Disabled
On-board Intel SLP	Disabled
On-board Intel LAN	Enabled
On-board Intel PXE	Enabled
Lucent WaveLAN ROM	Disabled
WaveLAN PXE ROM	Disabled
Selectable ROM 7	Disabled
Selectable ROM 8	Disabled
Selectable ROM 9	Disabled
Selectable ROM 10	Disabled
Selectable ROM 11	Disabled
Selectable ROM 12	Disabled
Selectable ROM 13	Disabled
Selectable ROM 14	Disabled
Selectable ROM 15	Disabled
Selectable ROM 16	Disabled
Beep Error Codes	Off
Large Disk Access Mode	DOS
Local Bus IDE Adapter	Both
Advanced Chip Set Control	

Graphics Aperture	64 MB
Enable memory gap	Disabled
ECC Config	Disabled
SERR signal condition	Multip0le bit
Default Primary Video Adapter	AGP
PCI/PNP UMB Resource Exclusion	
C800 - CBFF	Available
CC00 – CFFF	Available
D000 – D3FF	Available
D400 – D7FF	Available
D800 – DBFF	Available
DC00 - DFFF	Available
PCI/PNP IRQ Resource Exclusion	
IRQ 3	Available
IRQ 4	Available
IRQ 5	Available
IRQ 7	Available
IRQ 9	Reserved
IRQ 10	Available
IRQ 11	Available
PCI/IRQ line 1	Auto Select
PCI/IRQ line 2	Auto Select
PCI/IRQ line 3	Auto Select
PCI/IRQ line 4	Auto Select
Boot-Time Diagnostic Screen	Disabled
QuickBoot Mode	Enabled

Continuous POST	Disabled
Boot menu retry	Keyboard
Allow Warm Boot	Disabled
Legacy USB Support	Disabled

Security Values

Supervisor Password Is	Clear
User Password Is	Clear
Set Supervisor Password	Press **Enter**
Set User Password	Press **Enter**
Diskette Access	Supervisor
Fixed Disk Boot Sector	Normal
Password on Boot	Disabled

Power Values

Power Savings	Disabled
Standby Timeout	Off
Auto Suspend Timeout	Off
IDE Drive 0 Monitoring	Disabled
IDE Drive 1 Monitoring	Disabled
IDE Drive 2 Monitoring	Disabled
IDE Drive 3 Monitoring	Disabled
PCI Bus Monitoring	Disabled
Video Power State Control	Auto

Boot Values

Hard Drive

CD-ROM
Removable Devices
IBA 4.0.22 Slot 0070

Exit Values

Exit Saving Changes	Press **Enter**
Exit Discarding Changes	Press **Enter**
Load Setup Defaults	Press **Enter**
Discard Changes	Press **Enter**
Save Changes	Press **Enter**

Interrupts (7401-22xx/35xx/45xx BIOS Version 2.2.1.x)

The following table lists the default settings. To resolve any conflicts, refer to the notes that follow the table.

IRQ	System Resource
NMI	I/O channel check
0	Reserved, interval timer
1	Reserved, keyboard buffer full
2	Reserved, cascade interrupt
3	Communications port (COM 2) or Port B
4	Communications port (COM 1) or Port A
5	Communications port (COM 3) or Port C
6	MSR
7	Parallel port 1
8	Real time clock
9	System monitor
10	Audio, LAN
11	Communications port (COM 4) or Port D
12	PS/2 compatible mouse port
13	Math coprocessor
14	On-board IDE
15	Secondary IDE

The Mouse uses IRQ 12 and so does the Touch Screen. Since the Touch Screen serves as a mouse, it cannot be freed up unless you don't want to use either. The Audio and LAN share IRQ 10, and since these are PCI IRQs, they can move around depending on what is available in the system.

Memory Map (7401-22xx/35xx/45xx BIOS Version 2.2.1.x)

The following table details the memory map for 7401-22xx/35xx/45xx terminals BIOS Version 2.2.1.x (Pentium III/Celeron processors). The ESCD area from ED000-EDFFF is not available for use as an Upper Memory Block (UMB) by memory managers. The area from E0000-EBFFF is currently not used by the BIOS and is available for use as UMB by memory managers. Parts of this area may be used by future versions of the BIOS to add increased functionality.

Address Range (hex)	Size	Description
FECFF000-FECFF01B	27	LAN PXE ROM
100000-10000000	255 MB	Extended memory
F0000-FFFFF	64 kB	System BIOS
EE000-EFFFF	8 kB	Main BIOS (available as UMB)
ED000-EDFFF	4 kB	ESCD (plug and play configuration area)
EC000-ECFFF	4 kB	OEM (available as UMB)
E0000-EBFFF	48 kB	BIOS Reserved (currently available as UMB)
D0000-DFFFF	64 kB	Available HI DOS memory
CE000-CFFFF	8 kB	Flash Disk (optional)
CC000-CDFFF	8 kB	NCR Trigantor MSR (optional)
C0000-CBFFF	48 kB	Onboard video BIOS
A0000-BFFFF	128 kB	Reserved for video memory
9FC00-9FFFF	1 kB	Extended BIOS Data (moveable by QEMM, 386MAX)
80000-9FBFF	127 kB	Extended conventional
00000-7FFFF	512 kB	Conventional

BIOS Default CMOS Values (7401-26xx/46xx BIOS Version 2.3.x.x)

The following are the default CMOS values for the ACPI BIOS on the Summa II processor boards in the 7401-26xx and 46xx terminals.

Note: When installing a new BIOS from the CD, the Processor Board type is automatically detected and the correct BIOS is automatically installed

Main Values

Note: An asterisk (*) indicates a variable value based on system specification.

System Time	(variable)
System Date	(variable)
Legacy Diskette A:	Disabled
Legacy Diskette B:	Disabled
Primary Master	*
Type	Auto
Total Sectors	*
Maximum Capacity	*
Multi-Sector Transfers	16 Sectors
LBA Mode Control	Enabled
32 Bit I/O	Disabled
Transfer Mode	FPI0 4/DMA 2
Ultra DMA Mode	Disabled
Primary Slave	None
Type	Auto
Multi-Sector Transfers	Disabled

LBA Mode Control	Disabled
32 Bit I/O	Disabled
Transfer Mode	Standard
Ultra DMA Mode	Disabled
Secondary Master	CD-ROM
Type	Auto
Multi-Sector Transfers	Disabled
LBA Mode Control	Disabled
32 Bit I/O	Disabled
Transfer Mode	FPI0 4/DMA 2
Ultra DMA Mode	Mode 2
Secondary Slave	None
Type	Auto
Multi-Sector Transfers	Disabled
LBA Mode Control	Disabled
32 Bit I/O	Disabled
Transfer Mode	Standard
Ultra DMA Mode	Disabled
System Memory	640 KB
Extended Memory	*

Advanced Values

Installed O/S	Other
Secured Setup Configuration	No
Reset Confirmation Data	No

Cache Memory	
Memory Cache	Enabled
Cache System BIOS	Write Protect
Cache Video BIOS	Write Protect
Cache Base 0-512 k	Write Back
Cache Base 512K-640 k	Write Back
Cache Extended Memory	Write Back
Cache A000-AFFF	Disabled
Cache B000-BFFF	Disabled
Cache C800-CBFF	Disabled
Cache CC00-CFFF	Disabled
Cache D000-D3FF	Disabled
Cache D400-D7FF	Disabled
Cache D800-DBFF	Disabled
Cache DC00-DFFF	Disabled
Cache E000-E3FF	Write Protect
Cache E400-E7FF	Write Protect
Cache EC00-EFFF	Write Protect
PS/2 Port	Touchscreen
USB Port 2	Auto
I/O Device Configuration	
Serial Port A	Enabled
Base I/O Address/IRQ	3F8/IRQ 4
Powered Port	Auto
Serial Port B	Enabled
Base I/O Address/IRQ	2F8/IRQ 3

Parallel Port	Enabled
Mode	ECP
Base I/O Address	378
Interrupt	IRQ 7
DMA Channel	DMA 1
Fdc on Lpt	Disabled
Floppy Disk Controller	Disabled
Serial Port C	Enabled
Mode	Normal
Base I/O Address	3E8
Interrupt	IRQ 5
Powered Port **Note:** Must be set to **On** for the 7401-4xxx with Pin Pad	Auto
Serial Port D	Enabled
Base I/O Address	2E8
Interrupt	IRQ 11
Mode	RS-232
Disk-On-Chip Address	CE00-CFFF
MSR Address	CC00-CDFF
MSR Interrupt	6
System Monitors	
+12 V Status	*
+ 2.5 V Status	*
+ 5 V Status	*
CPU Temperature	*

System Temperature	*
Vcc Status	*
Vcore Status	*
Vlcd Status	*
Vtt Status	*
Multiple ROM Menu	
Parallel CD-ROM Boot	Disabled
On-board Intel SLP	Disabled
On-board Intel LAN	Enabled
On-board Intel PXE	Enabled
Lucent WaveLAN ROM	Disabled
WaveLAN PXE ROM	Disabled
Selectable ROM 7	Disabled
Selectable ROM 8	Disabled
Selectable ROM 9	Disabled
Selectable ROM 10	Disabled
Selectable ROM 11	Disabled
Selectable ROM 12	Disabled
Selectable ROM 13	Disabled
Selectable ROM 14	Disabled
Selectable ROM 15	Disabled
Selectable ROM 16	Disabled
Beep Error Codes	Off
Large Disk Access Mode	DOS
Local Bus IDE Adapter	Both
Advanced Chip Set Control	

Graphics Aperture	64 MB
Enable memory gap	Disabled
ECC Config	Disabled
SERR signal condition	Multip0le bit
Default Primary Video Adapter	AGP
Speedstep Mode	Enabled
PCI/PNP UMB Resource Exclusion	
C800 - CBFF	Available
CC00 – CFFF	Available
D000 – D3FF	Available
D400 – D7FF	Available
D800 – DBFF	Available
DC00 - DFFF	Available
PCI/PNP IRQ Resource Exclusion	
IRQ 3	Available
IRQ 4	Available
IRQ 5	Available
IRQ 7	Available
IRQ 9	Reserved
IRQ 10	Available
IRQ 11	Available
PCI/IRQ line 1	Auto Select
PCI/IRQ line 2	Auto Select
PCI/IRQ line 3	Auto Select
PCI/IRQ line 4	Auto Select
Boot-Time Diagnostic Screen	Disabled

QuickBoot Mode	Enabled
Continuous POST	Disabled
Boot menu retry	Keyboard
Allow Warm Boot	Disabled
Speaker Volume	Soft
Legacy USB Support	Disabled

Security Values

Supervisor Password Is	Clear
User Password Is	Clear
Set Supervisor Password	Press **Enter**
Set User Password	Press **Enter**
Diskette Access	Supervisor
Fixed Disk Boot Sector	Normal
Password on Boot	Disabled

Power Values

Power Savings	Disabled
Standby Timeout	Off
Auto Suspend Timeout	Off
IDE Drive 0 Monitoring	Disabled
IDE Drive 1 Monitoring	Disabled
IDE Drive 2 Monitoring	Disabled
IDE Drive 3 Monitoring	Disabled
PCI Bus Monitoring	Disabled
Video Power State Control	Auto

Boot Values

IBA 4.0.22 Slot 0070
Hard Drive
CD-ROM
Removable Devices

Exit Values

Exit Saving Changes	Press **Enter**
Exit Discarding Changes	Press **Enter**
Load Setup Defaults	Press **Enter**
Discard Changes	Press **Enter**
Save Changes	Press **Enter**

Interrupts (7401-26xx/46xx BIOS Version 2.3.x.x)

The following table lists the default settings. To resolve any conflicts, refer to the notes that follow the table.

IRQ	System Resource
NMI	I/O channel check
0	Reserved, interval timer
1	Reserved, keyboard buffer full
2	Reserved, cascade interrupt
3	Communications port (COM 2) or Port B
4	Communications port (COM 1) or Port A
5	Communications port (COM 3) or Port C
6	MSR
7	Parallel port 1
8	Real time clock
9	System monitor
10	Audio, LAN
11	Communications port (COM 4) or Port D
12	PS/2 compatible mouse port
13	Math coprocessor
14	On-board IDE
15	Secondary IDE

The Mouse uses IRQ 12 and so does the Touch Screen. Since the Touch Screen serves as a mouse, it cannot be freed up unless you don't want to use either. The Audio and LAN share IRQ 10, and since these are PCI IRQs, they can move around depending on what is available in the system.

Memory Map (7401-26xx/46xx BIOS Version 2.3.x.x)

The following table details the memory map for 7401-26xx/46xx terminals BIOS Version 2.3.1.2 (Pentium III/Celeron processors with ACPI). The ESCD area from ED000-EDFFF is not available for use as an Upper Memory Block (UMB) by memory managers. The area from E0000-EBFFF is currently not used by the BIOS and is available for use as UMB by memory managers. Parts of this area may be used by future versions of the BIOS to add increased functionality.

Address Range (hex)	Size	Description
FECFF000-FECFF01B	27	LAN PXE ROM
100000-10000000	255 MB	Extended memory
F0000-FFFFF	64 kB	System BIOS
EE000-EFFFF	8 kB	Main BIOS (available as UMB)
ED000-EDFFF	4 kB	ESCD (plug and play configuration area)
EC000-ECFFF	4 kB	OEM (available as UMB)
E0000-EBFFF	48 kB	BIOS Reserved (currently available as UMB)
D0000-DFFFF	64 kB	Available HI DOS memory
CE000-CFFFF	8 kB	Flash Disk (optional)
CC000-CDFFF	8 kB	NCR Trigantor MSR (optional)
C0000-CBFFF	48 kB	Onboard video BIOS
A0000-BFFFF	128 kB	Reserved for video memory
9FC00-9FFFF	1 kB	Extended BIOS Data (moveable by QEMM, 386MAX)
80000-9FBFF	127 kB	Extended conventional
00000-7FFFF	512 kB	Conventional

BIOS Default CMOS Values (7401-21xx/31xx BIOS Version 1.5.0.4 - Discontinued)

The following are the BIOS default CMOS values for the terminal.

Note: When installing a new BIOS from the CD, the Processor Board type is automatically detected and the correct BIOS is automatically installed

Main Values

System Time	(variable)
System Date	(variable)
Legacy Diskette A:	144 MV/1.25 MV, 3 ½"
Legacy Diskette B:	Disabled
IDE Primary Master	
Type	[Auto]
Cylinders	4191
Heads	16
Sectors/Track	63
Maximum Capacity	2163 MB
Multi-Sector Transfers	16 Sectors
LBA Mode Control	Enabled
32 Bit I/O	Disabled
Transfer Mode	Fast PIO 4
Ultra DMA Mode	Disabled
IDE Primary Slave	
Type	None

IDE Secondary Master	
Type	None
IDE Secondary Slave	
Type	None
Memory Cache	Enabled
Cache System BIOS area	Enabled
Cache Video BIOS area	Disabled
System Memory	640 kB
Extended Memory	31744 kB
Power Savings	Disabled
Standby Timeout	Off
Auto Suspend Timeout	Off
Fixed Disk	Disabled
Video	Disabled
IDE Drive 0 Monitoring	Disabled
IDE Drive 1 Monitoring	Disabled
IDE Drive 2 Monitoring	Disabled
IDE Drive 3 Monitoring	Disabled
PCI Bus Monitoring	Disabled
Boot sequence	
1. LANDesk® Service Agent II	
2. Hard Drive	
Continuous POST	Disabled

Advanced Values

I/O Device Configuration

Local Bus IDE adapter	Primary
Serial port A	Auto
Serial port B	Auto
Mode	Normal
Parallel port	Auto
Mode	Bi-directional
Floppy disk controller	Disabled
Disk-On-Chip Address	Disabled
MSR Address	Disabled
Plug and Play	No
Reset Configuration Data	No
PS/2 Mouse	Auto
Large Disk Access Mode	DOS
Secured Setup Configurations	No

PCI Configuration

ISA Graphics Device Installed	No
PCI/PNP ISA UMB Region Exclusion	Available (all)

Interrupts (7401-21xx/31xx BIOS Version 1.5.0.4 - Discontinued)

The following table lists the default settings.

IRQ	System Resource
NMI	I/O Channel Check
0	Reserved, Interval Timer
1	Reserved, Keyboard buffer full
2	Reserved, Cascade interrupt
3	Serial Port 2
4	Serial Port 1
5	User available
6	Reserved, Floppy
7	Parallel Port 1
8	Real Time Clock
9	NCR Motion, Thermal interrupt
10	LAN
11	Windows Sound System/USB
12	Touch Screen
13	Reserved, Math coprocessor
14	On-board IDE (available if IDE is disabled)
15	MSR

Memory Map (7401-21xx/31xx BIOS Version 1.5.0.4 - Discontinued)

The following table details the memory map for the 7401-21xx/21xx terminals BIOS Version 1.5.0.4 (Pentium processor). The ESCD area from ED000-EDFFF is not available for use as an Upper Memory Block (UMB) by memory managers. The area from E0000-EBFFF is currently not used by the BIOS and is available for use as UMB by memory managers. Parts of this area may be used by future versions of the BIOS to add increased functionality.

Address Range (hex)	Size	Description
FECFF000-FECFF01B	27	LAN PXE ROM
100000-10000000	255 MB	Extended memory
F0000-FFFFF	64 kB	System BIOS
EE000-EFFFF	8 kB	Main BIOS (available as UMB)
ED000-EDFFF	4 kB	ESCD (plug and play configuration
EC000-ECFFF	4 kB	OEM (available as UMB)
E0000-EBFFF	48 kB	BIOS Reserved (currently available
D0000-DFFFF	64 kB	Available HI DOS memory
CE000-CFFFF	8 kB	Flash Disk (optional)
CC000-CDFFF	8 kB	NCR Trigantor MSR (optional)
C8000-CBFFF	16 kB	Available HI DOS memory
A0000-C7FFF	160 kB	Video memory and BIOS
9FC00-9FFFF	1 kB	Extended BIOS Data (moveable by
80000-9FBFF	127 kB	Extended conventional
00000-7FFFF	512 kB	Conventional

Chapter 6: Operating System Recovery

Introduction

This chapter discusses procedures how to recover the Operating System using the integrated or parallel CD-ROM drive. The software is distributed on bootable CD-ROM media. The drivers necessary to run the CD-ROM are temporarily installed during boot.

It is also possible to perform a BIOS update using a network connection. Refer to the *NCR FitClient Software User's Guide* for information about that procedure.

Prerequisites

The following are required on the 7401 to perform an OS recovery using a CD:

- Bootable CD-ROM drive
  - Integrated 7401-F058/F059
  - External 2336-K007 (Parallel CD-ROM – Series 5 or Series 6)
- The terminal BIOS must be 1.02.00.00 or greater.
  - MicroSolutions BackPack CD-ROM Series 6 requires BIOS 2.1.1.1 or greater
- Keyboard

When performing an OS recovery from a larger source image (larger disk) to a smaller destination disk you must use the special procedure described in the *OS Recovery from a Larger Disk Image* section that follows.

7401-22xx/35xx Prerequisite

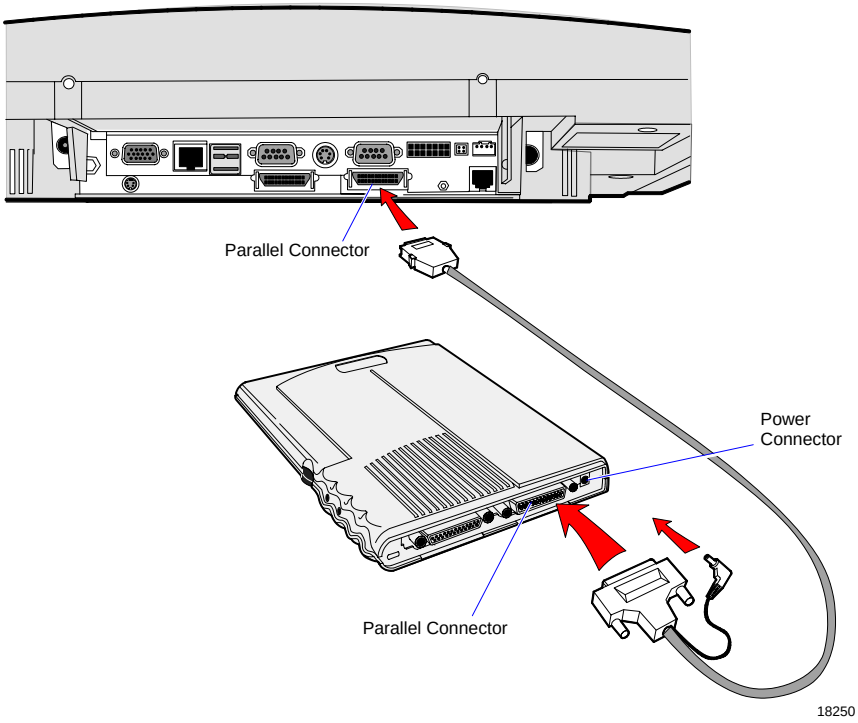
On terminals equipped with Pentium III/Celeron processors you must release memory resources to permit CD-ROM access. Refer to the *Setup* chapter and make the following changes to the BIOS settings (Setup Utility).

- Reset BIOS to *Default* settings
- Set the On-Board Intel PXE to *Disabled*

External CD-ROM

If you do not have an integrated CD-ROM drive, connect the external CD-ROM as follows.

1. Connect the external CD-ROM (2336-K007) drive to the parallel port on the terminal.
2. Connect the opposite end of the CD-ROM cable (end with the power connector pigtail) to the CD-ROM drive parallel connector.



Updating Procedures

1. Apply power to the terminal so the CD-ROM drive can be opened.
2. Insert the CD that contains the operating system image.

7401 Model	Software CD LPINs			
	Win2000	WinXPe	WinNT	Win98
7401-21xx, 31xx	Not Supported	Not Supported	D370-0433-0100	D370-0444-0100 *
7401-22xx, 25xx, 32xx, 35xx	D370-0504-0100	D370-0485-0100	D370-0483-0100	D370-0481-0100 *
7401-26xx	D370-0484-0100	D370-0567-0100	D370-0483-0100	Not Supported
7401-45xx	D370-0554-0100	Not Supported	D370-0553-0100	Not Supported
7401-46xx	D370-0484-0100	D370-0567-0100	D370-0553-0100	Not Supported

* Support for Windows 98 has been discontinued.

3. Boot the terminal.
4. Press **F2** at the screen prompt to enter the Setup Utility.
5. In the **Advanced** menu, select **I/O Device Configuration**.
6. Verify that **LPT 1 Mode** is set to **ECP**.
7. Go back to the **Advanced** menu, select **Multiple ROM Menu**.
8. Set the **Parallel CD-ROM Boot** to **Enabled**.
9. Exit Setup and Save Changes.

   As the terminal reboots, you should see a message during boot indicating that the CD-ROM has been recognized:

```
Micro Solutions BACKPACK CD-ROM v0.3
. . .
Booting from BACKPACK CD
Starting MS-DOS
```

10. Follow the DOS screen prompts. After each entry you are asked to confirm your input. You can use *1* or *y* for **Yes**, *2* or *n* for **No**.
11. Enter whether or not you want to perform **Disk verification**. (Answering **Yes** takes twice as long, but is recommended.)

    If **Yes** is selected:

    - The Ghost software verifies write operations and handles bad FAT clusters.
    - The Ghost error file (GHOST.ERR) is displayed before rebooting

    If **No** is selected:

    - The Ghost error file is displayed before rebooting only if Ghost aborts.

      Caution: If the error file is displayed, the batch file pauses for user input before rebooting. You may use Ctrl-C to cancel out of the batch file if you want to see the error file again, but **nothing** should be done that writes to the hard disk before rebooting. GHOST.ERR is on the RAM disk and is lost on reboot.
12. Select which type of recovery you want to perform from the next menu (normally option #1).

    1) Redo entire disk with the first partition the same size.
    2) Redo the first OS partition.
    3) Redo the second OS partition.

    The Ghost software then begins the disk recovery from the CD. It displays a progress bar and gives you an estimate how long the process should take.

    When the recovery process is completed, the client hard disk is restored to its preinstalled condition, as originally received from the factory.
13. At the completion of the recovery process remove the CD and press **Enter** to reboot the terminal.

14. Enter Setup when the terminal reboots and reset the **Parallel CD-ROM Boot** to **Disabled**.

Completing the OS Installation (Win2000)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. After the terminal reboots, it will perform a disk check and then continue with the Windows 2000 installation.
2. Enter the *User Name* and *Organization*.
3. Enter the *Computer Name* for the client.
4. Enter the *Administrator's Account Password* (optional)
5. When prompted, press *Finish* to reboot the client.
6. Login when prompted.
7. Run the MicroTouch screen calibration from the Desktop icon.

Completing the OS Installation (WinXPe)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. Click the Admin button to login as Administrator.
2. Read the EULA (End-User License Agreement) information in the DOS window, then type **EXIT** and press **Enter** to close the DOS window.
3. Start the Network Setup Wizard.
4. Select options to identify the network information for the terminal environment.

5. Enter the *Computer Description*.
6. Enter the *Computer Name*.
7. Enter the *Workgroup Name*.
8. When prompted, press *Finish* to reboot the terminal.
9. Log in when prompted.
10. Open the Control Panel or use the TouchWare Icon on the desktop and run the MicroTouch screen calibration.

Completing the OS Installation (WinNT)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. After the terminal reboots, press *Next* at the Windows Setup screen.
2. Accept the Microsoft license agreement.
3. Enter the *User Name* and *Organization*.
4. Enter the *Computer Name* for the client.
5. Enter the *Administrator's Account Password* (optional)
6. When prompted, press *Finish* to reboot the client.
7. Log in when prompted.
8. Open the Control Panel and run the MicroTouch screen calibration.

Completing the OS Installation (Win98) – (Discontinued)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. When the terminal boots it enters the Windows setup routine.

Note: When installing Win98 on terminals with Processor Boards (7401-21xx/31xx) there are few differences in the procedure as follows:

a) The terminal starts the *Add New Hardware Wizard*.

b) For each device found, permit Windows to search for new drivers (take defaults).

c) After each driver is installed you are asked to reboot. Answer **No**.

2. At the **User Information** screen, enter the *User* information. This can be done using a keyboard or you can use the touch screen keyboard. After entering the information, press **Enter** or touch **OK**.
3. Go into the Control Panel and set the terminal Date and Time.
4. In the Control Panel, run the MicroTouch screen calibration.

Gold Disk Contents

This section describes the contents of each of the Gold Disk Images, including all the additions and changes that were made on top of the generic operating system.

For each operating system, NCR **strongly** recommends that the drivers placed in the `c:\install` directory be left there for the purposes of servicing and maintaining the system. If you are using the information in this section to build your own operating system image and not using NCR's provided OS Recovery image as a base image, then we recommend that all installed drivers be placed in a similar `c:\install` directory for support.

Microsoft Operating System License Agreements

When purchasing a workstation or kiosk preloaded with a Microsoft operating system, the application provider must follow certain license agreement guidelines. Listed below are some of the major points of Microsoft's "Embedded Software" agreement, which currently covers DOS, Win 3.11, Windows 95, Windows 98, Windows NT, Windows 2000, and Windows XPe.

- The end user application should not permit the user (typically a cashier) to exit the application so that they may be able to browse the operating system desktop, explorer, or other Microsoft operating system user interface elements. This does not apply to servicing, upgrading, or diagnosing problems for the workstation by services or field engineers. This restriction is meant to ensure that the end user is only permitted to navigate within the confines of the end user's application under normal operating conditions.
- The NCR OS Recovery image can only be used to recover or update systems with licenses procured from NCR.

Operating System Restrictions

The following section describes restrictions for operating systems used with the 7401 terminal.

Standby and Hibernate Mode Restriction

When using a 7401 terminal without a keyboard or mouse, the Windows 2000, Windows XP PRO, and Windows XP Embedded OS *Standby Mode* and *Hibernate Mode* should be avoided. These two *modes* place the hardware in a *low power state* that requires an interrupt to restart the processor.

The Windows 2000 and Windows XP Embedded Gold Disk Images disable *Hibernate Mode* and *Standby Mode* on the 7454 terminal. ***These two modes should not be used without a keyboard or mouse.***

NCR 7401-22xx/25xx/32xx/35xx Win2000 Operating System Recovery Software *(Version 02.03.00.01)*

(LPIN: D370-0504-0100)

This product should only be used on 7401 terminals with a Microsoft Windows 2000 license.

7401-22xx/25xx/32xx/35xx Windows 2000 Operating System Recovery Software provides the means of restoring the operating system to the hard disk of a 7401 terminal. The bootstrap program (di_intel.bsd) and disk recovery boot image (di_intel.bid) are downloaded to the target terminal over the network and restore the hard disk to the preinstalled state as shipped from the factory. The following software is installed:

- Microsoft Windows 2000 Professional with Service Pack 2
- Microsoft Internet Explorer 5.5 (version 5.50.4134.0600)
- SMI Lynx EM/EM+ Video driver (version 5.0.2195.178)
- SoundFusion Audio driver (version 5.12.01.3041)

- Intel 82559 Ethernet LAN drivers (version 5.0.67.0)
- MicroTouch driver (version 5.62)
- NCRSYSM driver (version 2,02,01,002)
- Windows Installer (version 1.1)

The following drivers are not installed automatically, but can be installed from their respective locations:

- Backpack CD-ROM (3.02) C:\Install\Drivers\CDRom
- Edgeport USB (1.15.02) C:\Install\Drivers\USB

Configures the following settings/revisions:

- Preinstalls W2K to include the Product ID Number (PID)
- Places the Gold Drive Part Number, Date Created, LPIN, and Release in Registry under:

  `HKey-Local_Machine\Software\NCR\Gold Drive`

- Runs Sysprep, using sysprep.inf and sysprep.bat, so that the mini installation will run on initial boot with the following parameters:
  - Skip EULA
  - Automatically include PID
- Establishes a FAT32 primary system partition that fills the entire drive
- Includes necessary OS cab files in C:\Install
- Installs SP1 and SP2
- Installs SMI Control Panel
- Installs Intel Proset utility
- Enables APM
- Sets 'APM monitor shutoff' to 'Never'
- Enables PME (in Intel Proset utility) set to 'Hardware Default'
- Enables DMA
- Sets color to 16 bit

NCR 7401-26xx/46xx Win2000 Operating System Recovery Software

(Version 02.05.00.02)

(LPIN: D370-0484-0100)

This product should only be used on 7401 terminals with a Microsoft Windows 2000 license.

7401-26xx/46xx Windows 2000 Operating System Recovery Software provides the means of restoring the operating system to the hard disk of a 7401 terminal that has a Summa II processor board with ACPI BIOS. The bootstrap program (di_intel.bsd) and disk recovery boot image (di_intel.bid) are downloaded to the target terminal over the network and restore the hard disk to the preinstalled state as shipped from the factory. The following software is installed:

- Microsoft Windows 2000 Professional with Service Pack 2
- Microsoft Security Rollup Package (W2KSRP1)
- Microsoft Internet Explorer 6.0 SP1 (6.0.2800.1106 SP1)
- SMI Lynx 3DM/3DM+ Video driver (version 5.0.2195.178)
- ESS Allegro Audio (5.12.1.1167)
- Intel 82559 Ethernet LAN drivers (version 5.0.67.0)
- MicroTouch driver (version 5.63 SR3)
- NCRSYSM installed (3.0.4.12) – Minimum required for ACPI support
- Windows Installer (version 2.0)
- ATX Printer driver (1.03)

The following drivers are not installed automatically, but can be installed from their respective locations:

- Backpack CD-ROM (3.02) C:\Install\Drivers\CDRom
- Magtec MCR (1.01.07) C:\Install\Drivers\MCR
- USB Camera (2.15) C:\Install\Drivers\Camera
- Edgeport USB (2.15) C:\Install\Drivers\USB

Configures the following settings/revisions:

- Preinstalls W2K to include the Product ID Number (PID)
- Places the Gold Drive Part Number, Date Created, LPIN, and Release in Registry under:

  `HKey-Local_Machine\Software\NCR\Gold Drive`

- Runs Sysprep, using sysprep.inf and sysprep.bat, so that the mini installation will run on initial boot with the following parameters:
  - Automatically include PID
- Establishes a FAT32 primary system partition that fills the entire drive
- Includes necessary OS cab files in C:\Install
- Installs SMI Control Panel (4.3.5)
- Installs Intel Proset utility
- Enables PME (in Intel Proset utility) set to 'Hardware Default'
- Enables DMA (DMACheck.exe provided in C:\Install)
- Sets Resolution to 800x600, color to High
- Makes PinPad testing folder available in C:\Install\Drivers\PinPad
- Replaces the standard EULA with the NCR-specific EULA
- Installs MS SNMP, set to Manual

- Addresses hotplug keyboard issue, registry values added: KLM\System\CurrentControlSet\Services\i8042prt\Parameters
  - Value: Headless
  - Type: REG_DWORD
  - Data: 0x1
- Runs TerminalCheck.exe in Run registry to determine correct hardware platform (otherwise it will shut down)
- Hides MS splash screen by adding /noguiboot parameter to boot.ini

NCR 7401-45xx Win2000 Operating System Recovery Software

(Version 02.04.00.02)

(LPIN: D370-0554-0100)

This product should only be used on 7401 terminals with a Microsoft Windows 2000 license.

7401-45xx Windows 2000 Operating System Recovery Software provides the means of restoring the operating system to the hard disk of a 7401 terminal. The bootstrap program (di_intel.bsd) and disk recovery boot image (di_intel.bid) are downloaded to the target terminal over the network and restore the hard disk to the preinstalled state as shipped from the factory. The following software is installed:

- Microsoft Windows 2000 Professional with Service Pack 2
- Microsoft Internet Explorer 5.5 (version 5.50.4134.0600)
- SMI Lynx EM/EM+ Video driver (version 5.0.2195.178)
- SoundFusion Audio driver (version 5.12.01.3041)
- Intel 82559 Ethernet LAN drivers (version 5.0.67.0)
- MicroTouch driver (version 5.63)
- NCRSYSM installed (3.0.1.9)
- Windows Installer (version 1.1)
- ATX Printer installed (1.05)
- MagTec magnetic card reader installed (1.01.07)
- Sun JVM installed (1.3.1_01)

The following drivers are not installed automatically, but can be installed from their respective locations:

- Backpack CD-ROM (3.02) C:\Install\Drivers\CDRom
- Edgeport USB (1.15.2) C:\Install\Drivers\USB

Configures the following settings/revisions:

- Preinstalls W2K to include the Product ID Number (PID)
- Places the Gold Drive Part Number, Date Created, LPIN, and Release in Registry under:

  `HKey-Local_Machine\Software\NCR\Gold Drive`

- Runs Sysprep, using sysprep.inf and sysprep.bat, so that the mini installation will run on initial boot with the following parameters:
  - Automatically include PID
- Establishes a FAT32 primary system partition that fills the entire drive
- Includes necessary OS cab files in C:\Install
- Installs SP1 and SP2
- Installs SMI Control Panel
- Installs Intel Proset utility
- Enables APM
- Sets APM monitor shutoff' to 'Never'
- Enables PME (in Intel Proset utility) set to 'Hardware Default'
- Enables DMA
- Sets color to 16 bit
- Makes PinPad testing folder available in C:\Install\Drivers\PinPad
- Changes audio hardware acceleration from 'standard' to 'emulation only'

- Replaces the standard EULA with the NCR-specific EULA

NCR 7401-22xx/25xx/32xx/35xx WinXPe Operating System Recovery Software *(Version 02.05.00.01)*

(LPIN: D370-0485-0100)

This product should only be used on 7401 terminals with a Microsoft Windows XPe license.

7401-22xx/25xx/32xx/35xx Windows XPe Operating System Recovery Software provides the means of restoring the operating system to the hard disk of a 7401 POS terminal. The bootstrap program (di_intel.bsd) and disk recovery boot image (di_intel.bid) are downloaded to the target terminal over the network and restore the hard disk to the preinstalled state as shipped from the factory. This enables installation of the following software:

- Microsoft Windows XPe w/ SP1
- SMI Lynx 3DM/3DM+ Video driver (6.13.10.227)
- Intel 82559 Ethernet LAN drivers (6.01.03.0000)
- NCRSYSM driver (3.0.4.12)
- MicroTouch drivers (5.64)

The following drivers are not installed automatically, but can be installed from their respective locations (Readme files exist in these locations, as well):

- Backpack CD-ROM (4.0.100.1190) C:\Install\Drivers\CDRom
- Edgeport USB (2.20) C:\Install\Drivers\USB
- Inside Out Networks Watchport/V Camera (2.20) C:\Install\Drivers\Camera

Furthermore, the following settings/revisions have been configured:

- Preinstalled XPe to include the Product ID Number (PID)
- Placed the Gold Drive Part Number, Date Created, LPIN, and Release in Registry under:

  HKey-Local_Machine\Software\NCR\Gold Drive
- Established a NFTS primary system partition that fills the entire drive
- Included necessary OS cab files in C:\Install
- Installed SMI Control Panel (4.2.2)
- Installed Intel Proset utility
- Set virtual memory to 128
- Enabled APM
- Set 'APM monitor shutoff' to 'Never'
- Set 'Enable PME' (in Intel Proset utility) to 'Hardware Default'
- Set color to 24 bit
- Added SetResolution.exe to RunOnce registry.
- Added NCR-specific EULA.

NCR 7401-26xx/46xx WinXPe Operating System Recovery Software

(Version 02.05.00.01)

(LPIN: D370-0567-0100)

This product should only be used on 7401 terminals with a Microsoft Windows XPe license.

7401-26xx/46xx Windows XPe Operating System Recovery Software provides the means of restoring the operating system to the hard disk of a 7401 POS terminal. The bootstrap program (di_intel.bsd) and disk recovery boot image (di_intel.bid) are downloaded to the target terminal over the network and restore the hard disk to the preinstalled state as shipped from the factory. This enables installation of the following software:

- Microsoft Windows XPe w/ SP1
- SMI Lynx 3DM/3DM+ Video driver (6.13.10.227)
- Intel 82559 Ethernet LAN drivers (6.01.03.0000)
- NCRSYSM driver (3.0.4.12)
- MicroTouch drivers (5.64)
- Edgeport USB driver (2.20)
- Practical Automation ATX 38 Printer driver (V1.04)

The following drivers are not installed automatically, but can be installed from their respective locations (Readme files exist in these locations, as well):

- Backpack CD-ROM (4.0.100.1190) C:\Install\Drivers\CDRom
- HyperCom available (V4.9.0) C:\Install\Drivers\HperCom
- Inside Out Networks Watchport/V Camera (2.20) C:\Install\Drivers\Camera
- Magtec MCR (1.01.07) C:\Install\Drivers\MagTek

Furthermore, the following settings/revisions have been configured:

- Preinstalled XPe to include the Product ID Number (PID)
- Placed the Gold Drive Part Number, Date Created, LPIN, and Release in Registry under:

  HKey-Local_Machine\Software\NCR\Gold Drive
- Established a NFTS primary system partition that fills the entire drive
- Included necessary OS cab files in C:\Install
- Installed SMI Control Panel (4.2.2)
- Installed Intel Proset utility
- Set virtual memory to 128
- Enabled APM
- Set 'APM monitor shutoff' to 'Never'
- Set 'Enable PME' (in Intel Proset utility) to 'Hardware Default'
- Set color to 24 bit
- Added SetResolution.exe to RunOnce registry.
- Added NCR-specific EULA.

NCR 7401-/22xx/25xx/26xx/32xx/35xx NT Operating System Recovery Software *(Version 02.05.00.02)*

(LPIN: D370-0483-0100)

This product should only be used on 7401 terminals with a Microsoft Windows NT Workstation 4.0 license.

7401-22xx/25xx/26xx/32xx/35xx NT Operating System Recovery Software provides the means of restoring the operating system to the hard disk of a 7401 terminal that has either a Summa or Summa II processor board. The bootstrap program (di_intel.bsd) and disk recovery boot image (di_intel.bid) are downloaded to the target terminal over the network and restore the hard disk to the preinstalled state as shipped from the factory. The following software is installed:

- Microsoft Windows NT Workstation 4.0 with Service Pack 6a
- Microsoft Internet Explorer 6.0 SP1 (6.0.2800.1106 SP1)
- MicroTouch drivers (5.63 SR3)
- SMI Lynx 3DM Video driver (4.00.1381.0178)
- SoundFusion Audio driver (4.01.2086)
- ESS Allegro Audio (4.03.00.3077)
- Intel 82559 Ethernet LAN drivers (5.00.66.0000)
- NCRSYSM driver (3.0.4.12)
- Windows Installer (2.0)

The following drivers are not installed automatically, but can be installed from their respective locations:

- Backpack CD-ROM (2.04) C:\Install\Drivers\CDRom
- Edgeport USB (2.15) C:\Install\Drivers\USB
- USB Camera (2.15) C:\Install\Drivers\Camera

Configures the following settings/revisions:

- Preinstalls NT to include the Product ID Number (PID)
- Places the Gold Drive Part Number, Date Created, LPIN, and Release in Registry under:

  `HKey-Local_Machine\Software\NCR\Gold Drive`

- Runs Sysprep (so that the mini installation will run on initial boot) with the following parameters:
  - Automatically include PID
- Host.cmd set in RunOnce to update the registry
- Establishes a 2gb FAT16 primary system partition
- Establishes a secondary NTFS partition that fills the remainder of the drive
- Includes necessary OS cab files in C:\Install
- Makes SP6a folder available in C:\Install (installed)
- Installs SMI Control Panel (4.3.5)
- Installs Intel Proset utility
- 'Enable PME' (in Intel Proset utility) set to 'Hardware Default'
- Replaces the standard EULA with the NCR-specific EULA
- Installs MS SNMP, set to Manual
- Disables SoundFusion Audio drivers in Devices Startup
- Disables ESS Audio Drivers
- Runs TerminalCheck.exe in Run registry to determine correct hardware platform (otherwise it will shut down)
- Runs EnableAudioDriver.exe in Run registry to enable the appropriate sound driver (SoundFusion or ESS)
- Enables DMA (DMACheck.exe provided in C:\Install)
- Hides MS splash screen by adding /noguiboot parameter to boot.ini
- Mutes Volume Line-In

NCR 7401-21xx/31xx NT Operating System Recovery Software

(Version 01.04.01.00)

(LPIN: D370-0433-0100)

Installs the following software:

- Microsoft Windows NT Workstation 4.0 with Service Pack 4a. Service Pack 6 included (but not installed) on the disk
- Microsoft Internet Explorer 5.0
- MicroTouch TouchWare Version 5.4 for Mouse Port software
- Chips & Technologies 69000 Video driver
- CrystalWare Audio driver
- Intel EtherExpress software
- Intel PIIX Bus Master IDE drivers
- M-Systems Disk-On-Chip 2000 driver (not installed) available
- Backpack CD-ROM drivers (not installed) available

Configures the following settings/revisions:

- Enables the NT Dump settings to:
  - send an administrative alert
  - write dump to file
  - overwrite existing file
  - auto reboot after dump
- Mutes the Volume Line-In
- Changes event log to overwrite events as needed for the Application Type event logs
- Changes the Windows Scroll Bar Size from 16 to 18 pixels for easier Touch response

- Sysprep.inf answer file created to:
  - Skip EULA
  - Preinstall the Product ID Number (PID)
- Places the Gold Drive Part Number, Date Created, LPIN, and Version in Registry under:
  `HKey-Local_Machine\Software\NCR\Gold Drive`
- Windows Installer (Version 1.1) installed
- Removes the following key from the registry (as a current COM9 issue workaround):
  `Hkey_Local_Machine\System\CurrentControlSet\Services\Serial\Parameters\ Serial 10999`
- Changes page file size to 139-256

NCR 7401-4xxx NT Operating System Recovery Software

(Version 02.05.00.02)

(LPIN: D370-0553-0100)

This product should only be used on 7401 terminals with a Microsoft Windows NT Workstation 4.0 license.

The 7401-4xxx NT Operating System Recovery Software provides the means of restoring the operating system to the hard disk of a 7401-45xx terminal that has a Summa processor board or s 7401-46xx terminal that has Summa II processor board. The bootstrap program (di_intel.bsd) and disk recovery boot image (di_intel.bid) are downloaded to the target terminal over the network and restore the hard disk to the preinstalled state as shipped from the factory. The following software is installed:

- Microsoft Windows NT Workstation 4.0 with Service Pack 6a
- Microsoft Internet Explorer 6.0 SP1 (6.0.2800.1106 SP1)
- SMI Lynx 3DM Video (4.00.1381.0178)
- SoundFusion Audio (4.01.2086)
- ESS Allegro Audio (4.03.00.3077)
- Intel 82559 Ethernet LAN (5.00.66.0000)
- NCRSYSM (3.0.4.12)
- Windows Installer (2.0)
- MicroTouch (5.63 SR3)
- ATX Printer (1.05)

The following drivers are not installed automatically, but can be installed from their respective locations:

- Backpack CD-ROM (2.04) C:\Install\Drivers\CDRom
- Edgeport USB (2.15) C:\Install\Drivers\USB
- Magtec MCR ((1.01.07) C:\Install\Drivers\Magtec
- USB Camera (2.15) C:\Install\Drivers\Camera

Configures the following settings/revisions:

- Preinstalls NT to include the Product ID Number (PID)
- Places the Gold Drive Part Number, Date Created, LPIN, and Release in Registry under:

  `HKey-Local_Machine\Software\NCR\Gold Drive`

- Runs Sysprep (so that the mini installation will run on initial boot) with the following parameters:
  - Automatically include PID
- Host.cmd set in RunOnce to update the registry
- Establishes a 2gb FAT16 primary system partition
- Establishes a secondary NTFS partition that fills the remainder of the drive
- Includes necessary OS cab files in C:\Install
- Makes SP6a folder available in C:\Install (installed)
- Installs SMI Control Panel (4.3.5)
- Installs Intel Proset utility
- 'Enable PME' (in Intel Proset utility) set to 'Hardware Default'
- Makes PinPad testing folder available in C:\Install\Drivers\PinPad
- Replaces the standard EULA with the NCR-specific EULA.
- Installs MS SNMP, set to Manual
- Disables SoundFusion Audio drivers in Devices Startup
- Disables ESS Audio drivers
- Runs TerminalCheck.exe in Run registry to determine correct hardware platform (otherwise it will shut down)
- Runs EnableAudioDriver.exe in Run registry to enable the appropriate sound driver (SoundFusion or ESS)
- Enables DMA (DMACheck.exe provided in C:\Install)
- Hides MS splash screen by adding /noguiboot parameter to boot.ini
- Starts SerMouse device so trackball works properly

NCR 7401-22xx/25xx/32xx/35xx Win98 Operating System Recovery Software *(Version 02.03.00.01)*

(LPIN: D370-0481-0100)

Support for Windows 98 has been discontinued. This product should only be used on 7401 terminals with a Microsoft Windows 98 license.

7401 22xx/25xx/32xx/35xx Win98 Operating System Recovery Software provides the means of restoring the operating system to the hard disk of a 7401 terminal. The bootstrap program (di_intel.bsd) and disk recovery boot image (di_intel.bid) are downloaded to the target terminal over the network and restore the hard disk to the preinstalled state as shipped from the factory. The following software is installed:

- Microsoft Windows 98 Second Edition
- Microsoft Internet Explorer 5.5 (version 5.50.4134.0600)
- MicroTouch driver (version 5.62)
- SMI Lynx 3DM Video driver (version 4.12.01.0034)
- SoundFusion Audio driver (version 4.12.01.0034)
- Intel 82559 Ethernet LAN drivers (version 5.00.67.0000)
- NCRSYSM driver (version 2.01.01.004)
- Windows Installer (version 1.1)

The following drivers are not installed automatically, but can be installed from their respective locations (Readme files exist in these locations, as well):

- Backpack CD-ROM (3.04) C:\Install\Drivers\CDRom
- Edgeport USB (1.15.2) C:\Install\Drivers\USB

Configures the following settings/revisions:

- Preinstalls Win98 to include the Product ID Number (PID)

- Places the Gold Drive Part Number, Date Created, LPIN, and Release in Registry under:

  `HKey-Local_Machine\Software\NCR\Gold Drive`

- Adds Userinfo.exe to Start Menu to capture User Name, User Organization, Computer Name, and Workgroup (once the user has entered this information, userinfo will remove itself from the Start Menu)
- Establishes a FAT32 primary system partition that fills the entire drive
- Includes necessary OS cab files in C:\Install
- Installs Intel Proset Utility
- Applies a Microsoft hotfix to replace usbhub.sys version 4.10.2222 with 4.10.2223; this executable has been placed in `C:\Install\Drivers\USB\Hotfix`
- Enables DMA
- Disables DSound Acceleration and Sensaura/EAX in the SoundFusion control panel
- Disables game device and joystick
- Sets to High Color
- Enables PME (in Intel Proset utility) set to 'Hardware Default'
- Mutes the Volume Line-In

NCR 7401-21xx/31xx Win98 Operating System Recovery Software

(Version 01.01.00.00)

(LPIN: D370-0444-0100)

Support for Windows 98 has been discontinued.

Installs the following software:

- Microsoft Windows 98 Second Edition
- Microsoft Internet Explorer 5.0
- MicroTouch TouchWare Version 5.4 for Mouse Port software
- Chips & Technologies 69000 Video driver
- Crystal Audio driver
- Intel 8255x-based PCI Ethernet Adapter
- Intel PIIX Bus Master IDE drivers
- Windows Installer (Version 1.1)
- Backpack CD-ROM drivers available (not installed)

Configures the following settings/revisions:

- Mutes the Volume Line-In
- Places the Gold Drive Part Number, Date Created, LPIN, and Version in Registry under:
  `HKey-Local_Machine\Software\NCR\Gold Drive`

OS Recovery from a Larger Disk Image

The following procedure should be used to restore an Operating System when the destination disk is smaller than the source image (i.e. OS Recovery was made on a 10 GB source disk, but is being recovered on a 4.3 GB drive).

1. Boot the system.

   You should see a message during boot indicating that the CD-ROM has been recognized:

   ```
   Micro Solutions BACKPACK CD-ROM v0.3
   . . .
   Booting from BACKPACK CD
   Starting MS-DOS
   ```

2. Follow the DOS screen prompts. After each entry, you are asked to confirm your input. You can use *1* or *y* for **Yes**, *2* or *n* for **No**.
3. Enter **No** at the **Disk verification** question.
4. Select which type of recovery you want to perform from the next menu (normally option #1).

   1) Redo entire disk with the first partition the same size.

   2) Redo the first OS partition.

   3) Redo the second OS partition.

5. At the *Press any key to continue* dialog box, press **[CTRL]-C** to abort the process. When asked `Terminate batch job?` Answer **Y**.
6. From the command prompt, change to drive Z, which is the location of the Ghost software (CD-ROM drive).
7. Run the Ghost command.

   `Ghost.exe`

8. Press **Enter**.

9. Select **Local** → **Disk** → **From Image** and press **Enter**.
10. The directory that Ghost is now looking in should be Z: (if not, switch to Z). Select the **File name to load image from** file (*nnnnnn*.gho) and press **Enter**.
11. Select the **Local destination drive** and press **Enter**.
12. Set the sizes of the primary and secondary partitions as follows.

O/S	Primary Partition/ Format	Secondary Partition Size
DOS	2 GB/FAT16	2 GB/FAT16
Win95	2 GB/FAT16	Fill remainder as FAT 32
WinNT	2 GB/FAT16	Fill remainder as NTFS
Win98	Single FAT 32 partition	N/A
Win2000	Single FAT 32 partition	N/A
WinXPe	Single NTFS partition	N/A

In order to do this you may need to clear the amount from the second partition.

13. Press **Enter**.
14. If you are recovering from Win9x, it is likely that the second partition will be too small for FAT32. If so, a dialog is displayed `Converting partition from FAT32 to FAT, proceed?` Choose **Yes**.
15. At the next dialog box, `Proceed with disk load? Destination drive will be permanently overwritten,` Choose **Yes** to start the recovery process.

Chapter 7: BIOS Updating Procedures

Introduction

The terminal's BIOS can be updated using a parallel CD-ROM drive and software available on bootable CD-ROM media. The drivers necessary to run the CD-ROM are temporarily installed during boot. This chapter describes this procedure.

It is also possible to perform a BIOS update using a network connection. Refer to the *NCR FitClient Software User's Guide* for information about that procedure.

Crisis Recovery

In the event the BIOS becomes corrupt, such as the result of a power failure during the BIOS Update procedure, you can use the method discussed later in this chapter in the *BIOS Crisis Recovery* section to recover the BIOS.

Prerequisites

The following are required on the 7401 in order to perform a BIOS update using a CD.

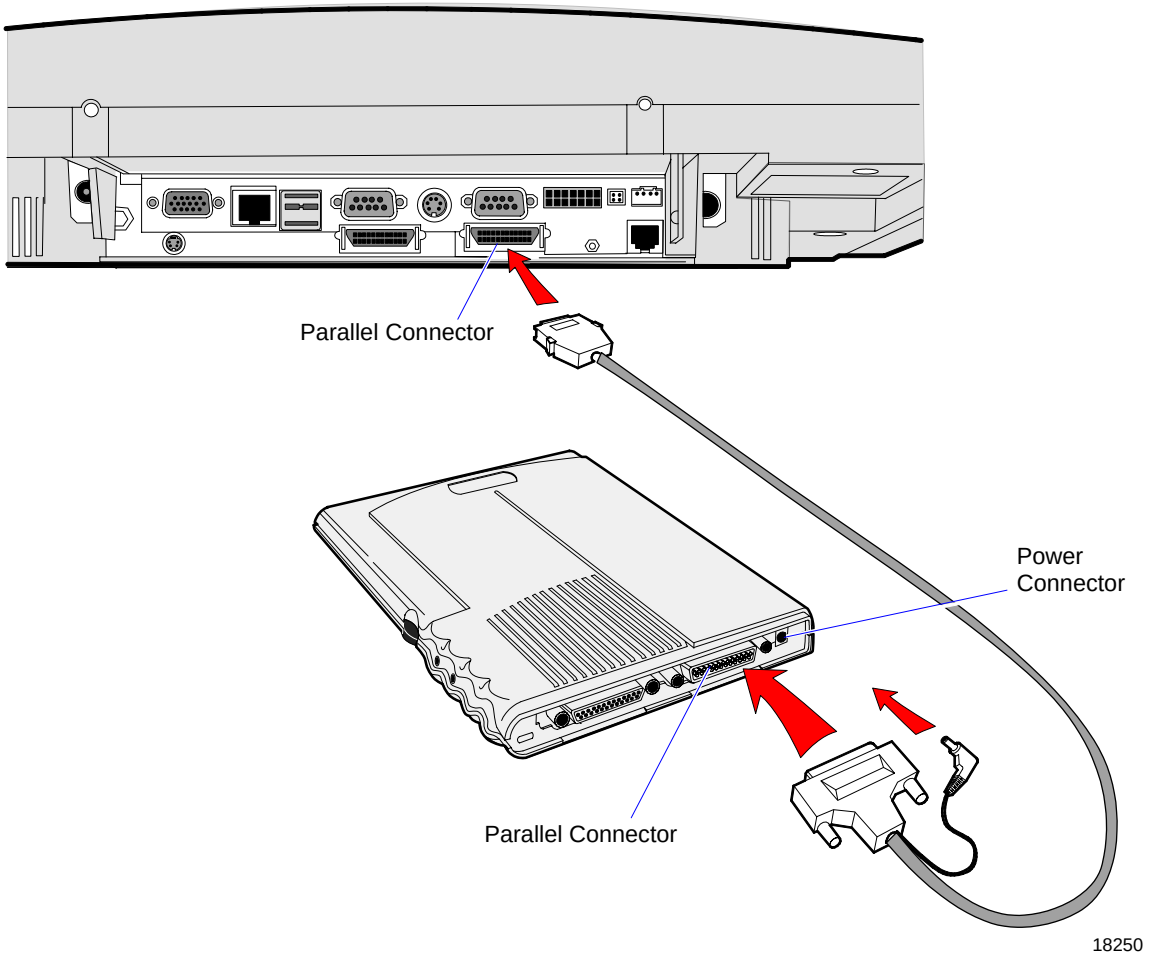
- Bootable CD-ROM drive
  - Integrated 7401-F058/F059
  - External 2336-K007 (Parallel CD-ROM – Series 5 or Series 6)
- The terminal BIOS must be 1.02.00.00 or greater.
  - MicroSolutions BackPack CD-ROM Series 6 requires BIOS 2.1.1.1 or greater
- Keyboard
- *NCR BIOS and BIOS Update Software*
  (LPIN: A370-0022-0100)

Updating Procedures

External CD-ROM

If you do not have an integrated CD-ROM drive, connect the Backpack External CD-ROM as follows.

1. Connect the external CD-ROM (2336-K007) drive to the parallel port on the terminal.
2. Connect the power connector to the CD-ROM drive.



3. Apply power to the terminal so the CD-ROM drive can be opened.
4. Insert the BIOS update CD.

   NCR BIOS and BIOS Update Software
   LPIN: A370-0022-0100
5. Boot the terminal.
6. Press **F2** at the screen prompt to enter the Setup Utility.
7. In the **Advanced** menu, select **I/O Device Configuration**.
8. Verify that **LPT 1 Mode** is set to **ECP**.
9. Go back to the **Advanced** menu, select **Multiple ROM Menu**.
10. Set the **Parallel CD-ROM Boot** to **Enabled**.
11. Exit Setup and Save Changes.

    As the terminal reboots, you should see a message during boot indicating that the CD-ROM has been recognized:

```
Micro Solutions BACKPACK CD-ROM v0.3
. . .
Booting from BACKPACK CD
Starting MS-DOS
```

12. Follow the screen prompts on the client to update the BIOS. You can select two methods to run the update program.
    - Automatic BIOS Update – update process runs unattended

      Note: You will see a prompt for terminal model and serial number information if the program detects invalid information in the current BIOS, or if you are replacing the Processor Board, in which case there is not model/serial number information in the BIOS.

      Important: Model/Serial Number is mandatory for FitClient operation.
    - Interactive BIOS Update – permits you to input/replace the model/serial number information that is stored in the BIOS.

Note: Model/Serial number data that is currently stored in the BIOS is displayed during power up.

13. When you get the green window, this indicates a successful update.
14. Remove the CD.
15. Press any key to reboot.
16. Enter Setup when the terminal reboots and load the **Setup Defaults** (Exit Menu).
17. From the Advanced menu, select **Reset Configuration Data** and then use the space bar to change the selection to **Yes**.
18. Exit Setup and Save Changes.
19. Remove the CD during reboot for the OS to begin. When system is restored, reset the BIOS to normal defaults.

BIOS Crisis Recovery

The procedures below provide a way to restore the BIOS resulting from a non-recoverable condition.

Note: Use this BIOS crisis recovery procedure only for a **NON-RECOVERABLE** BIOS failure. A non-recoverable BIOS state typically results from power loss during a flash BIOS update process. This is a rare occurrence and should not be confused with other hardware errors that cause a *no video* state. **This procedure is not intended to be used for changing or upgrading an operational BIOS**.

Required Hardware

Part Number	Part Name	Use
	PC with at serial port	Download BIOS
497-0408349	Cable, 9-Pin Female to 9-Pin Female RS232	PC to terminal connection
497-0411000	Cable, Parallel Interface	7401 parallel port to Dongle connection
497-0413418	Parallel Dongle	Forces BIOS recovery
497-0414184	POS Connector Board	7401 parallel port (not required if already present)

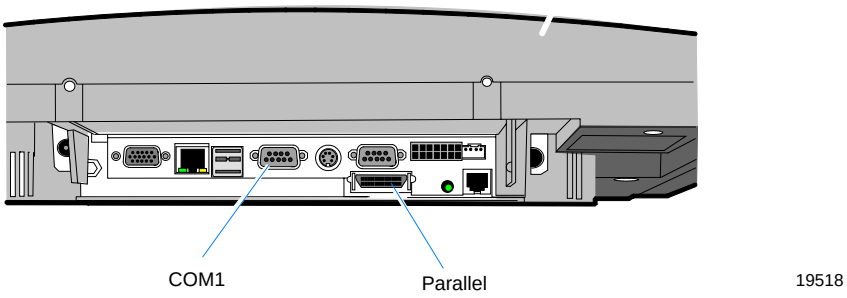
Required Software

Acquire the following software from NCR.

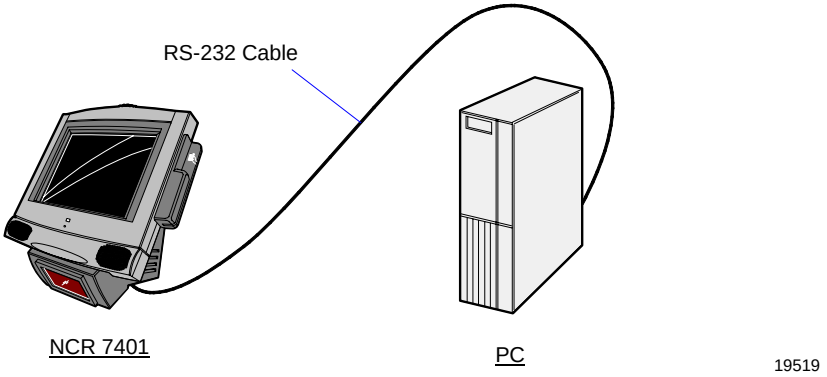
NCR 74xx BIOS and BIOS Update Software
LPIN: A370-0022-0100, Release 3.0 or later

Recovery Procedures

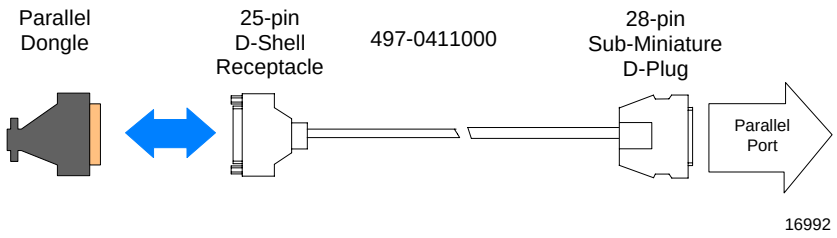
1. Connect the Parallel I/F Cable to the parallel (Customer Display) connector on the terminal.



2. Connect the two machines with the RS-232 cable. Use COM Port 1 on both machines (COM1 is next to the USB ports on the terminal).



3. Connect the Parallel Dongle to the Parallel I/F Cable.



4. Boot the PC in the DOS mode with CD-ROM support.

   Note: The PC must be running in the DOS mode (not in a Windows DOS box) for the software to operate correctly.

5. Insert the BIOS update CD into the PC.

   NCR BIOS and BIOS Update Software
   LPIN: A370-0022-0100

6. Apply power to the terminal.

7. On the PC, change directory to the CD-ROM drive.

   ```
   E: [Enter]
   ```

8. Enter the update command:

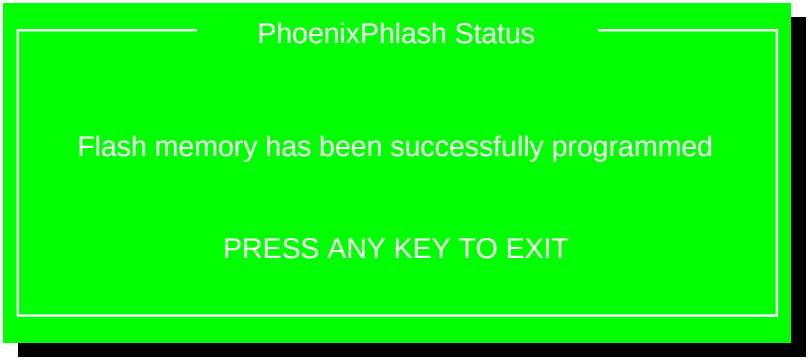
   ```
   EMBflash [Enter]
   ```

9. Select the number for the 7401 terminal from the menu list:

   ```
   1) 7454
   2) 7401
   3) 7452
   4) 7453
   5) 7455
   6) 7460
   7) 7451
   8) 7456

   2 [Enter]
   ```

   A blue screen displays as the program runs, showing the program progress, followed by a green screen, indicating a successful load.



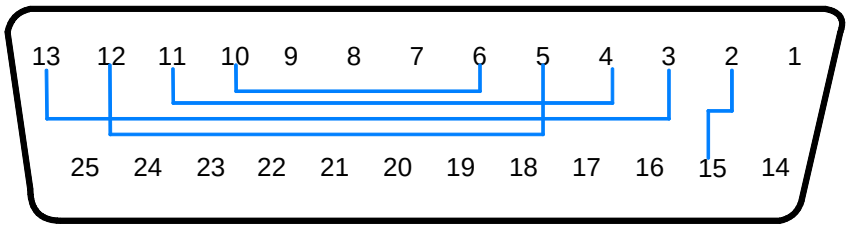
19502

The Class/Model/Serial # information is deleted using the Crisis Recovery procedure. Use the normal BIOS update procedures, as discussed earlier in this chapter, to restore the information.

Cable/Connector Pin-Out Information

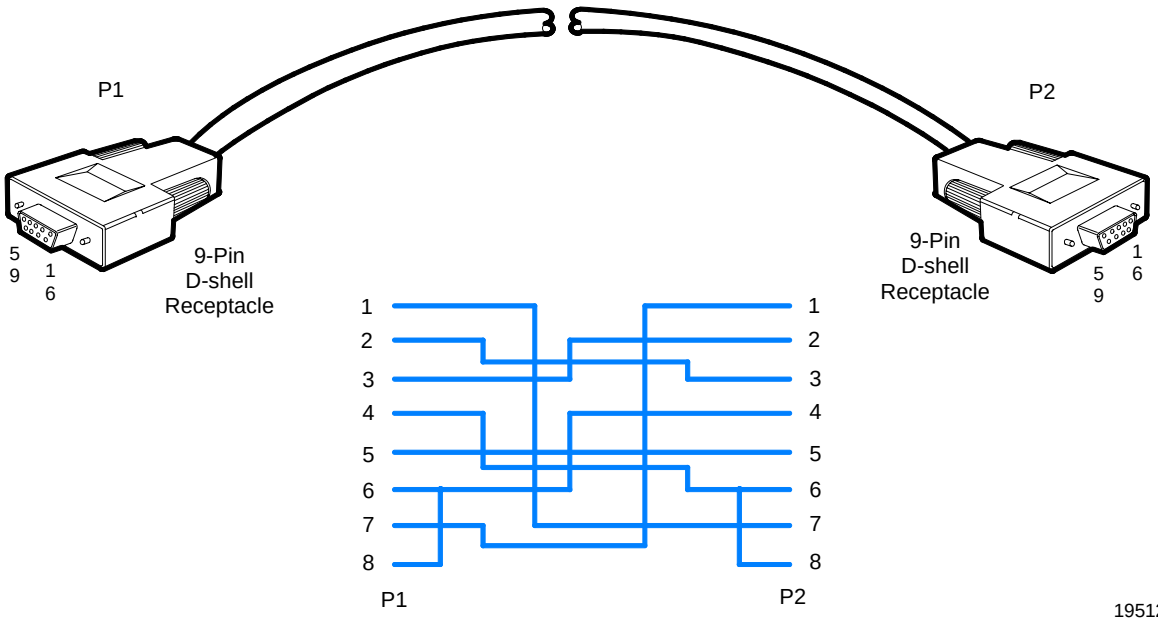
Parallel Dongle

25-Pin D-shell Receptacle
(Viewed from wiring side)



19513

RS-232 Cable



19512

Chapter 8: NCR 7401 7890/7892 Scanner Differences

Introduction

The 7401 integrated scanner module is a modified NCR 7890 Presentation Scanner or a NCR 7892 Bi-Modal Presentation Scanner; however, there are a few differences to be aware of.

1. The 7401 Scanner does not have its own integrated motion detector, as does the NCR 7890 and NCR 7892 Scanners.
2. The Scanner Programming Tags should **only** be used to set 7401 Scanner factory defaults. Modify additional settings using the NCR OPOS Programming Sequence function.
3. The defaults used with the 7401 Scanner are different from the standard NCR 7890 and NCR 7892 defaults.

Application developers who are integrating the 7401 Scanner should obtain a copy of the following documents:

- *NCR 7890 Presentation Scanner User's Guide* (BD20-0901-A)
- *NCR 7892 Bi-Modal Presentation Scanner User Guide* (B005-0000-1192)
- *NCR Scanner/Scale Interface Programmer's Guide* (BD20-1074-A)
- *NCR Scanner Programming Tags* (BST0-2121-74)

These documents are available on the Information Products Publishing (IPP) web site at http://www.info.ncr.com/.

Starting the 7401 Scanner Motor and Laser

The NCR 7890 and NCR 7892 Scanners have a built-in detector that senses when an object is in front of the unit. When an object is detected, it turns the laser and motor on so it can scan. This detector is provided so the scanner can be put into a low-power-consumption state when the unit is not in use, permitting the scanner to last longer and use less power.

The 7401 Scanner does not have a detector, but it does turn off the motor and laser after a programmable period of time called the Active Time. This period of time is from when the motor and laser are first started until they are automatically turned off. The Active Time is set by default to 20 seconds for the 7890 and 7892 Scanner; to 30 seconds for the 7401 Scanner.

NCR OPOS and the FitClient platform handle the lack of an integrated motion detector by using the 7401's motion detector located under the LCD screen. The NCR OPOS driver receives information (events) from the motion detector on the front of the 7401 to determine when the scanner should be started.

Note: This detector, although good at detecting someone walking up to the 7401, may not detect someone who has been standing in front of the 7401 for a while and then presenting an item below the 7401 Scanner for reading.

After the Active Time period expires, if the NCR OPOS scanner driver does not get another motion event, the motor and laser are turned off. If a motion event is received during the Active Time period, the motor and laser will continue to run and the timer is restarted. The application using NCR OPOS should keep track of the motion detection events (and the time since the last event) to ensure that the scanner is running when the application is requesting scanner input. If no motion events are received before the Active Time period expires, and a transaction is still active, the application must either restart the scanner or perform some other recovery procedure, such as asking the customer if they still want the same service performed. These procedures should be well designed and tested so that the customer is not attempting to scan an item when the motor and laser are off.

The motion events are documented in the NCR OPOS Online Help file that comes with the NCR OPOS software. The help file is also available on the IPP web site (search for a Title containing OPOS). Use of the motion detector without using the NCR OPOS drivers is not recommended and is currently not documented.

If the application is not using NCR OPOS, it must prepare the scanner to read using the Enable Scanner command and the Start Scanner command sequences. These commands are the same as the 7890 and 7892 commands as documented in the *NCR Scanner/Scale Interface Programmer's Guide*.

Once the Start Command is successfully issued, the motor and laser are turned on for the Active Time period. The application should keep track of the time so that at the end of the Active Time period, the Start command is re-issued or some other procedure is performed to continue the transaction. As noted in the OPOS paragraph above, the design of these procedures should be carefully considered to limit customer frustration.

Programming the 7401 Scanner Using Programming Tags

Obtain the following Scanner Programming Tags (BST0-2121-74):

- Programming Mode
- Hex 3
- Hex 0
- Hex 7
- Save and Reset
- Default

1. Power cycle the 7401 terminal.
2. Listen for the Scanner power-up tone. Immediately scan the **Default** Scanner Programming Tag.

   Note: If a keyboard is attached, the Pause key may be pressed to delay terminal restart until scanner testing is complete. Terminal restart can be resumed by pressing any key.
3. Listen closely to the scanner beep sequence returned from scanning the Default Programming Tag.
4. If ***four (4)*** short and ***three (3)*** long beeps are heard, the scanner is programmed with 7401 default settings and no further action is necessary. If beeps returned are something other than four (4) short and three (3) long, proceed to step 5.
5. Scan the Scanner Programming Tags in the following order:
   - Programming Mode
   - Hex 3
   - Hex 0
   - Hex 7
   - Save and Reset
6. Scan the **Default** tag again to verify correct 7401 scanner setting of four (4) short followed by three (3) long beeps.

Programming the 7401 Scanner Through the RS-232 Interface

As with the 7890 and 7892, the 7401 Scanner can be programmed through the RS-232 interface. The 7890, 7892, and 7401 Scanners have a Program command (`33h 45h`) which permits you to send the tag information through the communications port (COM1 on the 7401). Send the same sequences that would be input using the tags. See the *NCR Scanner/Scale Interface Programmer's Guide* for more information. The Disable command must be sent to the scanner before the Program command is sent.

The default for the message format is the same for the 7401 Scanner as it is for the 7890 and 7892 Scanners. There is no Start sentinel, and no BCC is used. The command is issued followed by the End sentinel which is an ETX (End of Text) character (`03h`). For example, the Start command is issued as `33h 38h 03h` or ASCII: 3 8 ETX.

7401 Scanner Default Settings

The 7401 Scanner is set up in manufacturing using an additional string of commands to change some of the default settings that are provided with the 7890 and 7892 scanners. Refer to the 7890 and 7892 documents for the complete list of defaults.

The defaults specifically programmed for the 7401 Scanner are listed below. These defaults are different from the 7890 and 7892 defaults.

Hex Command	ASCII Command	Command Description	Comments
31h, 30h, 35h,	1, 0, 5	Select RS-232 protocol	The 7401 Scanner can only be used on an RS-232 connection.
31h, 34h, 30h,	1, 4, 0	Disable Code 39	Enable with 1, 4, A, 1
31h, 35h, 30h,	1, 5, 0	Disable Interleaved 2 of 5	Enable with 1, 5, A, 1
31h, 37h, 30h,	1, 7, 0	Disable Code 128	Enable with 1, 7, A, 1
31h, 31h, 30h,	1, 1, 0	Disable Good Read Tone	Enable with 1, 1, A, 1
31h, 32h, 43h, 35h	1, 2, C, 5	30 Second Active Time	Other times can be programmed; see the 7890 programming books.

Appendix A: Cables

7401 Cables

Corporate ID	Part Number	Description
1416-C041-0030	497-0008623	Ethernet 10/100BaseT
1416-C266-0040	497-0407943	9-pin female to 9-pin female RS-232
1416-C266-0152	497-0409379	7193 RS-232 50 foot 9-pin female to 9-pin female
1416-C320-0030	006-8601011	Printer Power, SEV, straight receptacle
1416-C321-0030	006-8601012	Printer Power, UK, straight receptacle
1416-C322-0030	006-8601019	Printer Power, Australian, straight receptacle
1416-C323-0030	006-8601010	Printer Power, International, straight receptacle
1416-C325-0030	006-1009037	Printer Power, US, straight receptacle
1416-C337-0010	497-0407427	RS-232 interface, integrated
1416-C337-0040	497-0407429	RS-232 interface, remote
1416-C337-0152	497-0407430	RS-232 interface 50 foot
1416-C359-0007	497-0408349	9-pin female to 9-pin female RS-232 (27")
1416-C373-0080	497-0409432	25 foot cable
1416-C374-0040	497-0409433	14 foot cable
1416-C408-0030	230-0113955	Power, SEV, right angle receptacle
1416-C409-0030	230-0113956	Power, UK rectangular, right angle receptacle

Corporate ID	Part Number	Description
1416-C411-0030	006-1012224	Power, international, right angle receptacle
1416-C417-0040	497-0411815	Printer extender, 9-pin female to 25-pin female
1416-C418-0040	497-0411816	Printer extender, 25-pin male to 25-pin female
1416-C419-0030	250-0023191	Power, 120 V twist lock, right angle receptacle
1416-C464-0006	497-0413011	CD-ROM
1416-C472-0006	497-0411000	Parallel interface
1416-C528-0010	497-0415949	USB, 1 meter
1416-C528-0040	497-0415950	USB, 4 meter

Appendix B: Feature Kits

7401 Kits

Below is a comprehensive list of the optional hardware Feature Kits that can be installed in the customer environment. Kit installation instructions (for those requiring instruction) are available on the Information Products web sites.

- *NCR Intranet:* http://inforetail.atlantaga.ncr.com
- *Internet:* http://www.info.ncr.com

To locate the installation guides on these sites:

1. Select **General Search**.
2. Select the **Kit Instructions** icon.
3. In the **Kit Title** field, enter the *Kit Title*.

   Example: *MSR*

   or

   In the **Kit Number** field, enter the *Kit Number*.

   Example: *7401-K103*
4. Select Search

   The file can be viewed online by left-mouse clicking on the pub title, or if you prefer to download the entire file you can right-mouse click on the title then select the *Save Target as...* option.

If you aren't sure of the title of number you can display all kits associated with a terminal product class by:

1. In the **Class** drop-down list, select the *Class* of the terminal.

   Example: *7401*

2. Select **Search.**

Kit Number	Part Number	Description
2336-K001-V001	497-0411988	Ethernet to RS-232 port server
2336-K007-V001	497-0413163	External CD-ROM
2336-K008-V001	497-0413014	USB to RS-232 port server
2336-K012-V001	497-0413710	USB to RS-232 2-port server
2336-K016-V001	230-0145388	Hand-held scanner (12 V power)
2336-K019-V001	497-0417069	Mouse, RS-232
2336-K020-V001	006-8603087	Keyboard with trackball
2336-K021-V001	006-8603088	Serial to mouse adapter for keyboard with trackball
2336-K033-V001	497-0417357	Modem - PCMCIA 56 kB
2336-K037-V001	497-0419664	Pedestal Kit - Wide keyboard Tray
2336-K051-V001	497-0422195	7401 Printer Blank
2336-K052-V001	497-0422194	7401 Floor Standing Pedestal
2336-K100-V001	497-0421335	Keyboard, Black, 83-key, compact w/trackball
2336-K101-V001	497-0421339	PS/2 to Serial Adapter
2336-K206-V001		Swedish/Finnish Rugged Keyboard
2336-K207-V001		Italian Rugged Keyboard
2337-K010-V001	497-0417702	Bravo 4-label printer (US cord, without label peeler)
2337-K011-V001	497-0417703	Bravo 4-label printer (US cord, with label peeler)

Kit Number	Part Number	Description
2337-K012-V001	497-0417705	Bravo 4-label printer (EC cord, without label peeler)
2337-K013-V001	497-0417708	Bravo 4-label printer (EC cord, with label peeler)
2337-K014-V001	497-0417709	Bravo 4-label printer (UK cord, without label peeler)
2337-K015-V001	497-0417710	Bravo 4-label printer (UK cord, with label peeler)
2756-K121-V001	497-0409421	Domestic power supply
2756-K122-V001	497-0409434	Y-cable adapter (mouse/keypad)
2756-K124-V001	497-0409422	International power supply
5945-K010-V002	497-0414162	Cable – 4 M RS-232 (9-pin D shell)
5945-K012-V001	497-0414163	Cable – 8 M RS-232 (9-pin D shell)
5945-K020-V001	497-0412046	Power supply (120 V, 60 Hz, US/Can)
5945-K025-V001	497-0412800	Power supply (220-240 V, 50 Hz)
5945-K030-V001	497-0412047	Generic keyboard overlay
5945-K100-V004	497-0416165	Electronic payment terminal with 2 track MSR
5945-K300-V004	497-0416166	Electronic payment terminal with 3 track MSR
5992-K095-V001	497-0412211	Stylus
5992-K100-V008	497-0417677	Signature capture plus with 2 track MSR
7156-K270-V001	497-0408657	Switch button (20 pieces)

Kit Number	Part Number	Description
7156-K280-V001	497-0408653	Slip table
7156-K301-V002	497-0408654	Power supply
7156-K309-V001		Mounting Bracket
7156-K330-V002	497-0408656	Power supply (w/US power cord)
7158-K301-V001	497-0411975	Power supply (55 W)
7401-K016-V001	497-0421022	600 MHz Celeron processor
7401-K023-V001	497-0413159	128 MB memory
7401-K024-V001	497-0414201	64 MB SDRAM service kit
7401-K025-V001	497-0414202	128 MB SDRAM service kit
7401-K030-V001	497-0412201	POS connector board
7401-K031-V001	497-0414185	Adapter board kit
7401-K040-V001	497-0420672	16 MB Flash Disk
7401-K050-V001	497-0419933	Standard capacity hard drive (10 GB)
7401-K051-V001	497-0413160	Large capacity hard drive (20 GB)
7401-K059-V001	497-0421025	Integrated CD-ROM
7401-K060-V001	497-0412202	Dual PCMCIA port
7401-K070-V001	497-0416029	Dual RS-232 (Pentium III only)
7401-K071-V001	497-0416030	S-Video port
7401-K075-V001	497-0427095	USB Camera for 7401-4xxx
7401-K103-V001	497-0425057	MSR, 3 Track ISO, Angled (Model 45xx)
7401-K200-V001	497-0412200	High fidelity speaker module

Kit Number	Part Number	Description
7401-K201-V001	497-0420675	Hi fi speaker module w/IRDA
7401-K501-V001	497-0412157	Fixed-angle to tilt mount conversion
7401-K502-V001	497-0420092	Kit - Flush Mount
7401-K503-V001	497-0412158	Fixed-angle mount
7401-K504-V001	497-0420102	Fixed-angle mount w/Keyboard Port
7401-K505-V001		Fixed Angle Mount II
7401-K509-V001	497-0415774	Kit – Rear Cover for Fixed Angle Mount
7401-K512-V001	497-0428826	Fixed Angle Mount II with 7892 Scanner
7401-K521-V001	497-0411711	Wall mount bracket (fixed-angle mount)
7401-K522-V001	497-0411712	Table mount bracket (fixed-angle mount)
7401-K523-V001	497-0412811	Wall mount (fixed-angle mount/self-service printer)
7401-K525-V001	497-0416031	Fixed-angle mount with 7401-K580 printer
7401-K526-V001	497-0424762	Fixed-angle mount with 7401-K592 printer (Black)
7401-K530-V001	497-0416032	Pole mount kit for 7401-K525
7401-K533-V001	497-0411713	Wall mount bracket (tilt mount)
7401-K534-V001	497-0419085	Swivel mount bracket
7401-K535-V001	497-0421099	Countertop swivel mount bracket
7401-K536-V001	497-0420974	Fixed-angle mount tilt bracket

Kit Number	Part Number	Description
7401-K540-V001	497-0414186	Wall mount bracket with keyboard shelf
7401-K542-V001	497-0414279	Tilt mount bracket for keyboard shelf
7401-K543-V001	497-0417684	Wall mount bracket with keyboard shelf (wide)
7401-K580-V001	497-0420105	Self-service printer (80 mm) **Discontinued**
7401-K582-V001	497-0420820	Self-service printer (K582)
7401-K590-V004	497-0424497	Self-service printer (80, 82.5, 114 mm)
7454-K101-V002	497-0412005	MSR 3 track ISO
7454-K102-V001	497-0412299	MSR JIS 2 track
7455-K026-V001	497-0423400	256 KB SDRAM Kit
7949-K033-V001	497-418574	Pedestal – Straight Base
7949-K034-V001	497-418575	Pedestal – Curved Base
7949-K035-V001	497-418576	Pedestal – No Printer Option

Index

—1—

12.1 inch LCD No-Cabinet Feature, 3-37
15 inch LCD No-Cabinet Feature, 3-40

—4—

4055 Uninterruptible Power System (UPS), 3-43, 4-22

—7—

7401 Cables, A-1
7401 Kits, B-1
7401 Scanner Default Settings, 8-6
7401-4xxx Model Numbers, 2-2
7401-4xxx Printer
  Full page printer diagnostics and setup, 4-17
  Loading the paper, 4-13
  Removing paper from the paper feed rolls, 4-14
  Removing power from the printer, 4-14
  Using the printer test and display panel, 4-15

—A—

ACPI, 0-38, 2-22
Advance Configuration Power Interface, 0-38, 2-22
Advanced Power Management, 0-37
Allocating interrupts, 5-7
APM, 0-37
Audio, 0-28, 2-13
Auto-Logon
  setting, 3-49

—B—

BIOS Configuring a hard drive, 5-5
BIOS crisis recovery, 7-5
BIOS Default CMOS Values (7401-26xx/46xx BIOS), 5-18
BIOS Default CMOS Values (Pentium III/Celeron), 5-8
BIOS Default CMOS values (Pentium), 5-28
BIOS Recovery
  crisis recovery procedures, 7-5
  using CD-ROM, 7-1
BIOS Setup
  Allocating interrupts, 5-7
  Default factory settings, 5-7
  Entering Setup with a keyboard, 5-2
  Entering Setup without a keyboard, 5-1
  How to select menu options, 5-3

Setting boot options, 5-6
Setting memory cache, 5-5
Setting memory shadow, 5-6
Setting passrods, 5-4
Setting the date and time, 5-3
Boot options, setting, 5-6

—C—

Cable connector identification, 3-9, 4-5
Calibrating the Touch Screen, 4-27
Calibration from the BIOS, 4-30
Calibration Using Microcal (DOS), 4-29
Calibration Using MicroTouch (Windows), 4-27
Cash drawer
Installation, 3-16, 3-17
Cash Drawer Support, 0-31
CD-ROM drive, 0-52
Clearing password, 5-4
Compact Flash, 0-50, 2-30
Compatibility, 0-54
Completing the OS Installation (Win2000), 3-46, 4-24
Completing the OS Installation (Win98), 3-48, 4-26
Completing the OS Installation (WinNT), 3-47, 4-25
Completing the OS Installation (WinXPe), 3-46, 4-24
Configuring 7401-4xxx with U.K. keyboard, 4-1
Configuring a hard drive, 5-5
Configuring the Power Mon II® Software, 3-45
Country keyboards, 4-6, 4-8

—D—

Date and time, setting, 5-3
dual display implementation, 0-35, 2-19

—E—

EasyPoint 45 Pedestal, 2-34
Ethernet 10/100Base-T, 0-23, 2-8

—F—

Finalizing the Installation
7454-2xxx and 3xxx, 3-46
7454-4xxx, 4-24
Flash disk interface, 0-30, 2-15
FLASH memory implementation, 0-36, 2-20
Full page printer diagnostics and setup (7401-4xxx printer), 4-17

—G—

Gold Disk Contents, 6-8
Graphics subsystem, 0-33, 2-16

—H—

Hard disk drive, 0-46, 2-29
Hard drive, configuring, 5-5
Hardware monitor, 0-27, 2-12
Hardware options, 0-16, 2-4

—I—

Installation

7401-4xxx peripherals, 4-6
Angled Magnetic Stripe Reader (MSR), 4-7
Country Keyboards (7401-F118), 4-8
Fixed-Angle mount, 3-5
Tilt Mount, 3-10
Installing a 7401-4xxx on a Table Mount, 4-18
Installing a 7401-4xxx on the EasyPoint 45 Pedestal, 4-21
Installing the Power Mon II® Software, 3-44
Installing the UPS, 3-44
Integrated CD-ROM, 2-29
Internal speaker, 0-47, 2-30
Interrupts (7401-26xx/46xx BIOS), 5-26
Interrupts (Pentium III/Celeron), 5-16
Interrupts (Pentium), 5-31
Interrupts, allocating, 5-7
ISA interrupts, 5-7

—K—

Kit Configuration Diagram, 0-20

—L—

LAN status LEDs, 0-49, 2-32
LCD adapter board, 0-40, 2-23
LCD backlight inverter module, 0-40, 2-24

—M—

Magnetic stripe reader, 0-29, 0-33, 2-14, 2-16
Magnetic Stripe Reader, 2-27
Memory cache, setting, 5-5
Memory Map (7401-26xx/46xx BIOS), 5-27
Memory Map (Pentium III/Celeron), 5-17
Memory Map (Pentium), 5-32
Memory shadow, setting, 5-6
MicroTouch Touchscreen, 3-56, 4-27
Migration
retail applications, 0-55
retail peripherals, 0-55
retail systems, 0-56
Model number, 0-12, 2-2
Model Numbers, 0-14
Motion sensor, 0-47, 2-31
Motorized Card Reader, 2-27
Mounting a Fixed-Angle Mount Terminal, 3-21
Mounting the terminal
Tilt mount, 3-33
Wall mount, 3-24, 3-26
Wall mount – core module, 3-35
MSR, 0-29, 0-33, 2-14, 2-16

—N—

NCR 7401/7890 or 7892 Scanner Differences, 8-1

—O—

Operating System Recovery
using CD-ROM, 6-1
Operating System Restrictions, 6-9
Operator display
Description, 0-40, 2-23

OS Recovery from a Larger Disk Image, 6-29

—P—

Password
Clearing, 5-4
Password setup, 5-4
PCI expansion header, 0-27, 2-12
Pentium III connectors, 0-53
Pin Pad, 2-26
Plug and Play, 0-37, 2-21
POS connector board, 0-47, 2-30
Features, 0-16, 2-3
Power LED, 0-33, 2-16
Power OK LED, 0-48, 2-32
Power supply
Description, 0-49, 2-32, 2-33
Power/status LED, 0-48, 2-31
Printer Installation, 3-13
Printers, 0-43
Processor board
Connector descriptions, 0-30, 2-15
Features, 0-15, 2-3
Processor Board
Description, 0-21, 2-7
Processor/Chip Set, 0-21, 2-7
Programming the 7401 Scanner
Through the RS-232 Interface, 8-5
Using Programming Tags, 8-4

—R—

Removing paper from the paper feed rolls (7401-4xxx printer), 4-14
Removing power from the printer (7401-4xxx printer), 4-14
Reset switch, 0-46, 2-29
Resolutions supported, 0-35, 2-17
Ruggedized Keyboard with Trackball, 2-26

—S—

Scanner module, 0-50
Secure Cabinet with Integrated Speakers, 2-25
serial mouse
installation, 3-54
Serial number, 0-12, 2-2
Serial ports, 0-26, 2-11
Setting
Boot options, 5-6
Memory cache, 5-5
Memory shadow, 5-6
Setting time and date, 5-3
Setup utility, 0-37, 2-21
Speaker module, 0-50, 2-33
Standby and Hibernate Mode Restriction, 6-9
Starting the 7401 Scanner Motor and Laser, 8-2
System Configuration Diagram, 0-19, 2-6

—T—

Terminal Components not Supported, 0-18, 2-5
TFT (thin film transistor), 0-22
Time and date, setting, 5-3
Touch screen controller, 0-29, 2-14

—U—

U.K. Keyboard Configuration, 4-1
Universal serial bus, 0-26, 2-11
USB RS-232 port server, 0-51
Using the Full Page Printer, 4-13
Using the printer test and display panel (7401-4xxx printer), 4-15

—V—

Video subsystem, 0-22, 2-8

—W—

Wireless LAN communications, 0-25, 2-10